

SYSTEMATICS AND BIOLOGY OF *HOMERIA* (IRIDACEAE)¹

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ABSTRACT

Homeria is native to southern Africa, where its center of speciation and variation is the western Cape coastal mountain belt and immediate interior, an area of mediterranean climate. Only one species, *H. pallida* occurs exclusively outside the winter rainfall area of the Cape Province, and it ranges widely across the winter dry highland grassveld of southern Africa. *Homeria* belongs to a group of corm-bearing, bifacial-leaved genera of Old World Iridoideae-Irideae and is closely related to the African genus *Moraea*. It comprises mainly large-flowered outcrossing species adapted either to fly or bee pollination, but a few species are self-compatible and autogamous, including three in which complex heterozygosity occurs. In this study, the first revision of the genus since *Flora Capensis* (1896), in which six species were admitted, *Homeria* is divided into four sections. Thirty-one species are recognized of which ten are described here for the first time. Basic chromosome number is $n = 6$ and the genus comprises mostly diploid species, with a few polyploids; three species exhibit aneuploidy, $2n = 10, 9,$ and 8 . First chromosome counts for a few species are presented, as well as new counts for several others.

Homeria is a moderate-sized genus of Iridaceae native to southern Africa and occurring in the countries of Botswana, Namibia (South West Africa), Lesotho, and South Africa (Fig. 1). It is related to and perhaps derived from the large African genus *Moraea*. Widespread and fairly common throughout its range, *Homeria* is strongly concentrated in the winter rainfall region of the Cape Province. Most species have large brightly colored flowers and are outcrossers with a strong incompatibility system, but a few, smaller-flowered species are autogamous. *Homeria* is important economically as all species are believed to be highly toxic and are a significant cause of stock losses in southern Africa. In spite of its importance, *Homeria* has been little studied in the past and has remained greatly misunderstood, partly owing to the careless way in which specimens have been prepared, and partly to the rather small differences between species. Since Baker's (1896) treatment in *Flora Capensis* in which only 6 species were recognized, over 25 species were added, rather piecemeal, by Rudolf Schlechter (1900) and H. M. L. Bolus in the period 1920–1938. Recent redefinition of *Homeria* (Goldblatt, 1980a) has resulted in the transfer of five species from the genus, three to *Moraea* and two to a new genus, *Rheome*. Several species described by H. M. L. Bolus are reduced to synonymy here, while 10 new species are added, making a total of 31 species of *Homeria* recognized in this treatment (Table 1).

HISTORY

The first species of *Homeria* was described by Carl Peter Thunberg in 1787 in his *Dissertatio de Moraea*. Here *H. collina* was included in Thunberg's very heterogeneous assemblage of species placed in *Moraea*. This was not, however, the first known record of *Homeria*, for as early as 1678 a figure of a plant,

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TABLE 1. The sections and species of *Homeria* arranged in systematic order.

Section Namaquana		
1. <i>H. schlechteri</i> L. Bolus	14. <i>H. autumnalis</i> Goldbl.	
2. <i>H. ramosissima</i> Schltr.	15. <i>H. galpinii</i> L. Bolus	
3. <i>H. bolusiae</i> Goldbl.	16. <i>H. collina</i> (Thunb.) Salisb.	
Section Stipanthera		
4. <i>H. cookii</i> L. Bolus	17. <i>H. minor</i> (Ecklon) Goldbl.	
5. <i>H. marlothii</i> L. Bolus	18. <i>H. longistyla</i> Goldbl.	
6. <i>H. pallida</i> Baker	19. <i>H. patens</i> Goldbl.	
7. <i>H. britteniae</i> L. Bolus	20. <i>H. vallisbelli</i> Goldbl.	
Section Homeria		
8. <i>H. cedarmontana</i> Goldbl.	21. <i>H. flavescens</i> Goldbl.	
9. <i>H. ochroleuca</i> Salisb.	22. <i>H. tenuis</i> Schltr.	
10. <i>H. bulbifera</i> Lewis	Section Conanthera	
a. subsp. <i>bulbifera</i>	23. <i>H. miniata</i> (Andr.) Sweet	
b. subsp. <i>anomala</i> Goldbl.	24. <i>H. pendula</i> Goldbl.	
11. <i>H. comptonii</i> L. Bolus	25. <i>H. spiralis</i> L. Bolus	
12. <i>H. elegans</i> (Jacq.) Sweet	26. <i>H. fenestrata</i> Goldbl.	
13. <i>H. flaccida</i> Sweet	27. <i>H. tricolor</i> L. Bolus	
	28. <i>H. bifida</i> L. Bolus	
	29. <i>H. odorata</i> L. Bolus	
	30. <i>H. fuscomontana</i> Goldbl.	
	31. <i>H. brachygyne</i> Schltr.	

undoubtedly a species of *Homeria*, was published by Breyne in his *Plantarium Exoticarum Centuria Prima* under the polynomial *Sisyrinchium ex phoeniceo suave rubente flore aethiopicum*. This illustration depicts what seems to be a large-flowered species of *Homeria*, much wilted, to which the artist has given what appears to be a superior ovary like that found in *Tulipa*. The figure is the type of Linnaeus's *Tulipa breyniana*. Lewis (1941) believed the figure to represent *Homeria collina*, and she accordingly made the combination *H. breyniana* (L.) Lewis, to replace *H. collina*. Lewis was correct in identifying Linnaeus's *T. breyniana* with *Homeria*, but I believe she was mistaken in trying to place it to species. The illustration is far too crude and could equally be applied to any one of several *Homeria* species. It was for this reason that I recommended rejecting *H. breyniana* and restoring the use of the name *H. collina* (Goldblatt, 1973).

Only two more species of *Homeria* were described by the beginning of the nineteenth century, both assigned to *Moraea*. These were *M. elegans*, described by Jacquin in 1797, and *M. miniata*, by Andrews in 1804. Then in 1808 Ventenat (1808) erected the genus *Homeria*, basing it on *H. collina*, before any more species of *Homeria* were described. Strangely, however, Ventenat failed to make any combinations in the genus (Milne-Redhead, 1937), though *H. collina* is often attributed to him. *Homeria* was not generally accepted by contemporaries, and Ker (1810) continued to recognize species as *Moraea* (*M. collina*, *M. elegans*, *M. miniata*) while describing in addition *M. spicata* (a synonym of *H. elegans*) in his enumeration of this genus. Salisbury, in 1812, was the first botanist to use Ventenat's *Homeria*, and Salisbury validated the combination *H. collina*, as well as naming a fourth species, *H. ochroleuca*, previously treated *H. collina* var. γ . Robert Sweet also gave his stamp of approval to *Homeria* recognizing the genus consistently in all editions of his *Hortus Britannicus*. Continental botanists, however, continued to follow Thunberg and Ker in assigning species of *Homeria* to *Moraea*.

Despite accelerated botanical exploration in southern Africa in the mid and late nineteenth century, only some eight species were known by 1896 when Baker produced his treatment of Iridaceae in *Flora Capensis*. Baker in fact admitted only six, with *H. ochroleuca* and *H. flaccida* (as *aurantiaca*) treated as varieties of *H. collina*.

An important step towards understanding *Homeria* came with Schlechter's (1900) addition of five new species, all currently recognized, based on his own extensive collections. Among his collections, now distributed widely among world herbaria, were several more undescribed species to some of which he had given provisional names, e.g., *H. concordiae* for *H. schlechteri* L. Bolus, *H. latifolia*, now *H. odorata* L. Bolus, and *H. tulipifera*, now *H. vallisbelli* Goldbl.

H. M. L. Bolus continued to expand knowledge of *Homeria* beginning in 1920. She subsequently paid special attention to the genus and, working mainly from her own collections and from living plants, she described some 20 species in an 18-year period, ending in 1938. Several of Bolus's species are synonyms of earlier species, the types of which were not available to her, but the majority are currently recognized. A minor contribution to the knowledge of *Homeria* was made by N. E. Brown, who in 1929 described four new species in the Transvaal. All of these species are, I believe, merely forms of the widespread *H. pallida* and are reduced to synonymy here.

The total number of species of *Homeria* had, by 1950, increased to 38, a sixfold increase over the number in *Flora Capensis*. The genus has not, however, been revised since the *Flora Capensis* treatment, and consequently it had become very difficult to name species given the lack of keys and the very scattered literature on the genus.

Recent cytological and crossing data, supported by morphological evidence (Goldblatt, 1980a), has made it seem likely that *Homeria* as defined in the past was an unnatural genus and that it comprised three unrelated groups of species. The blue-flowered species previously known as *H. lilacina*, *H. speciosa*, and *H. rogersii* have now been transferred to *Moraea*, the genus to which hybridization studies supported by morphological similarities had indicated they were allied. The new genus *Rhoeme* was created for the only two *Homeria* species with a basic chromosome number of $x = 10$, *H. maximiliani* and *H. umbellata*. These two species have distinctive corm tunics and a basic chromosome number and karyotype that correspond with those of some primitive species of *Moraea*, and their relationships probably lie here rather than with the other remaining species of *Homeria*, which have a basic chromosome number of $x = 6$.

GEOGRAPHY

Although *Homeria* is distributed over a large part of southern Africa, much of this range is accounted for by *H. pallida* (Fig. 1), which extends in the north-west to Windhoek in Namibia and in the east to Pilgrims Rest in the Transvaal. *Homeria pallida* is a species of the winter dry highveld grassland. It flowers in spring, before the summer rains begin, and depends for its moisture either on scant winter rains, or on ground water in poorly drained, often submarshy situations.

All remaining species grow in the winter rainfall area of the Cape Province,

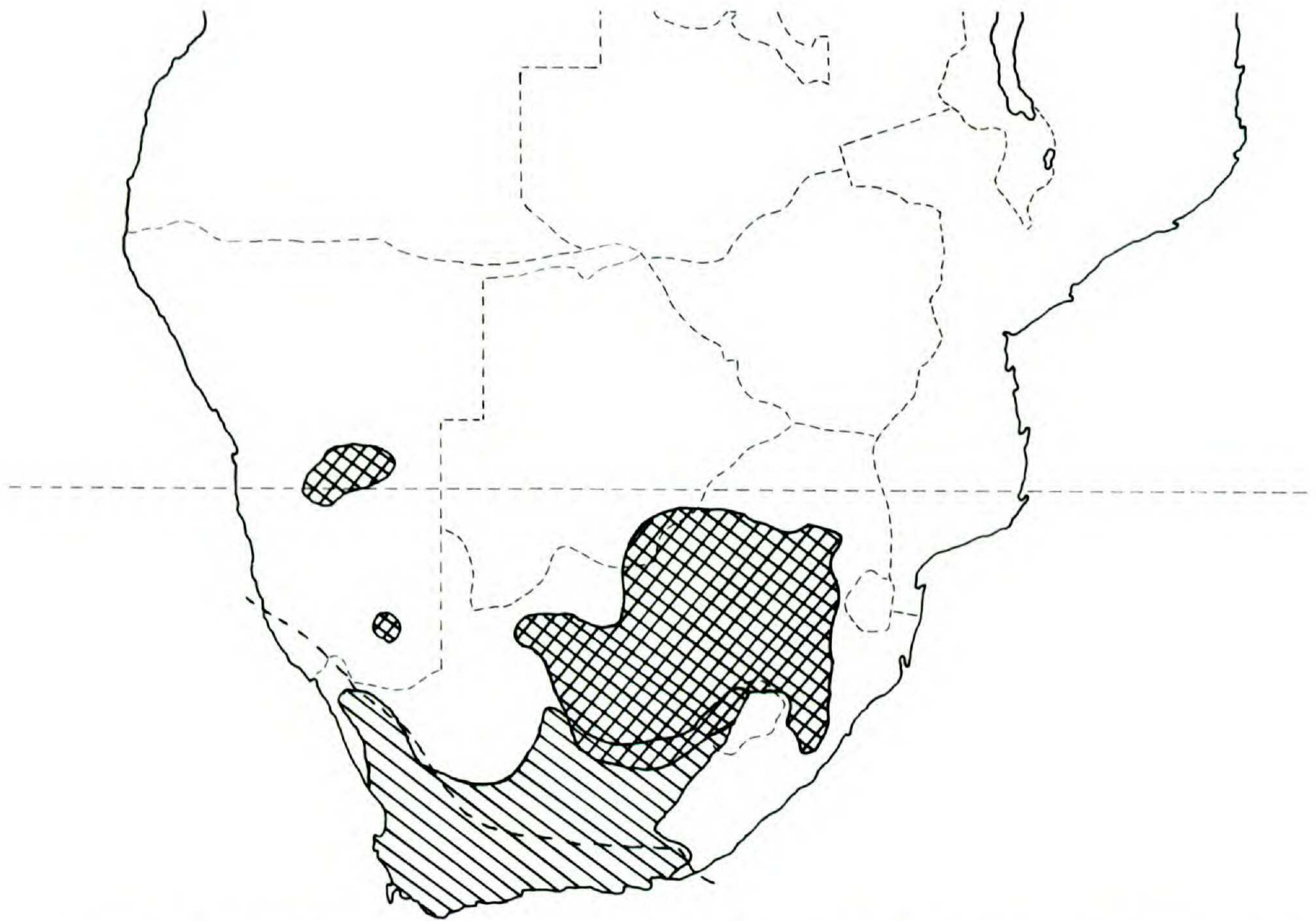


FIGURE 1. Distribution of the genus *Homeria*. The area of effective winter rainfall lies to the south and west of the dotted line. The range of *Homeria pallida* alone is cross hatched.

that is, along the west and southern coasts, or inland in mountainous areas. Only *H. cookii* has any substantial range outside the winter rainfall belt. It is mainly montane and grows in places where there is winter precipitation. *Homeria* has its center of development, both in number of species and in variability, in the mountains of the western Cape (Fig. 2). A total of 12 species occur in the Cold Bokkeveld-Cedarberg-Nardouw Mountain axis. This belt lies mainly in grid 3219 (Fig. 2) with limited extension to the northwest. There are six endemic species here, *H. tenuis*, *H. flavescens*, *H. cedarmontana*, *H. autumnalis*, *H. fuscomontana* and *H. patens*. Altogether 14 species occur in grid 3219, which includes the arid Tanqua basin which lies in the Cedarberg rain shadow, where *H. fenestrata* is endemic. Almost as rich is the grid immediately to the north, 3119 (Calvinia), with ten species. The western edge of this area, the Nieuwoudtville escarpment, accounts for much of the wealth with *H. spiralis* and *H. odorata* endemic locally, and all ten species of the grid occurring here. Species concentration falls rapidly moving east as rainfall decreases towards Calvinia.

Significant concentrations of species occur also in the grids to the south, 3319 (Worcester) and 3419 (Caledon) having nine and eight species respectively. *Homeria comptonii* is endemic to the Caledon area, and its close relative *H. elegans* almost so, with a single record just outside the area.

The western coastal belt is somewhat poorer in species than the more moun-

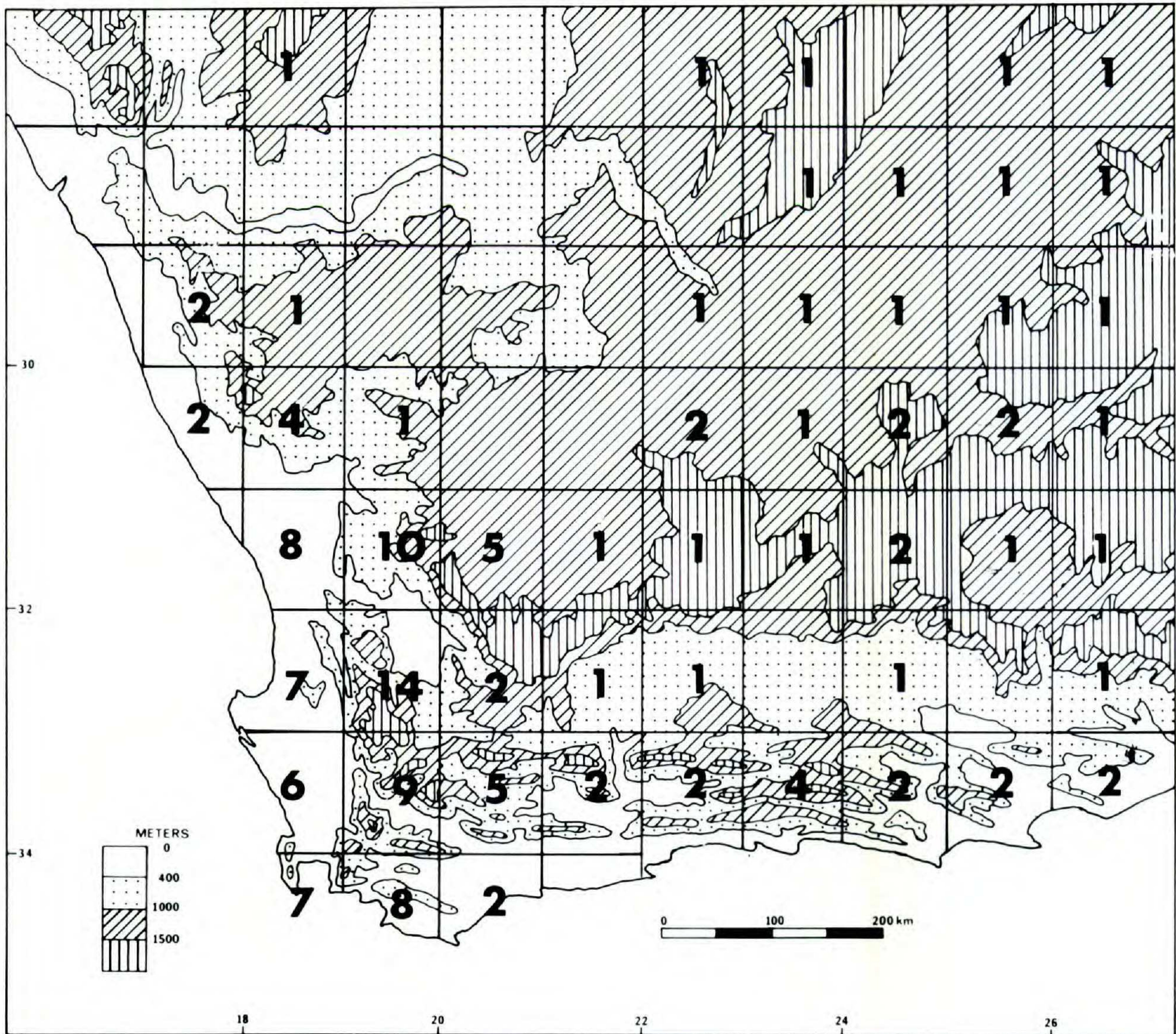


FIGURE 2. Concentration of species of *Homeria* within geographical degree squares. Part of the range of *H. pallida* (Fig. 1) falls outside the map area.

tainous areas immediately to its east, and there are six species in the Cape Peninsula and in the grid to the north. Concentration decreases northward gradually, with eight species in the 3118 grid (VanRhynsdorp), where *H. ramosissima* is endemic, and four in the 3018 grid (Kamiesberg) also with one endemic, *H. pendula*.

The more equable southern Cape coast and mountain belt, with a submediterranean climate, and up to 60% summer precipitation, has in contrast a poor representation of *Homeria*. The species that occur there generally have a wide distribution within the area or occur elsewhere as well. The only locally endemic species occur in the west in the Caledon grid where the climate is most extreme.

The overall pattern of species distribution in *Homeria* indicates that the dissected landscape of the western Cape and its immediate interior with its harsh mediterranean climate and low rainfall has provided the background for much of the speciation in *Homeria*. The geographic component, with its accompanying edaphic and microclimatic variation, is clearly the most significant factor in the evolution of the genus. Only rarely are related species pairs sympatric, and iso-

lating factors such as flowering season (*H. collina*-*H. minor*) (*H. collina*-*H. flaccida*) or large differences in flower structure, indicative of pollinator discrimination (*H. miniata*-*H. pendula*, *H. bifida*-*H. odorata*) appear to have assumed an important role in speciation.

TOXICITY AND ECONOMIC IMPORTANCE

It is generally known to farmers in southern Africa that species of *Homeria* are mildly to severely toxic to stock. The genus is consequently a well known wild plant over most of South Africa, where it is commonly called tulp. In parts of the provinces of Transvaal, Natal, and the Orange Free State members of the related genus *Moraea* are known by the same common name, and several species of this genus are also known to be poisonous, causing similar symptoms in cattle and sheep (Watt & Breyer-Brandwijk, 1962). *Homeria* and *Moraea* together are a significant cause of economic loss due to stock poisoning and in South Africa alone may result in losses estimated at between \$2.5-3 million per year from direct deaths, or debilitation (H. Vahrmeijer, pers. comm.). Human deaths have also been recorded, mostly when corms are eaten by mistake for those of edible tulp (*uintjie*), *M. fugax* (syn. *M. edulis*), and perhaps other species.

Several species of tulp (i.e., *Homeria* and *Moraea*) have been tested by veterinarians either in the field or under laboratory conditions at Onderstepoort Veterinary Research Institute and results of several tests have been published, notably by Steyn (1928, 1934). Regretfully, there are either no voucher specimens of the plants studied or the vouchers are now lost or unidentifiable as such so that experimental data on toxicity may not always be correct as to species examined. The systematics of both *Homeria* and *Moraea* have until recently been poorly known, and many species have been known under names now applied to different species. This adds to the confusion about which species are poisonous or whose effects have been experimentally studied.

It is known that the widespread *H. pallida* is extremely poisonous at certain phases of its life cycle. Plants also tested under the names *H. pura* and *H. glauca* may safely be attributed to *H. pallida*. No other species of *Homeria* appears to have been tested as critically for toxicity but Stent & Curson (1922) mention that "*H. collina* and its varieties" and "*H. elegans*" have caused fatalities among stock. It must be assumed that all species are likely to prove toxic, but further critical data are needed to amplify this observation. Other species recorded as poisonous are *H. miniata*, *H. ochroleuca* (as *H. lucasii*), *H. bulbifera*, *H. flaccida* (as *H. aurantiaca*) (Watt & Breyer-Brandwijk, 1962).

The toxic principle was identified as an alkaloid by M. Rindl in 1924 who named it homeridine. The main toxic action is a heart and nerve depressant. More recently Naudé & Potgieter (1966) reported that the main toxic component is a cardiac glycoside similar to those found in several bulbous Liliaceae that are also poisonous, such as *Scilla* and *Urginea*. Enslin et al. (1966) isolated and described the main toxic principle of *H. pallida*, 1 α ,2 α -epoxyscillirosidine. It would be of considerable interest to know more about the distribution of this and related alkaloids in *Homeria* and its relatives. The symptoms of tulp poisoning and treatments are discussed by Watt & Breyer-Brandwijk (1962).

BIOLOGY

ECOLOGY

Homeria is generally regarded as a weedy genus, a view influenced by the presence of huge numbers of plants of certain species in overgrazed pasture, or in vineyards and plowed fields. In fact, only a few species are normally found as weeds in southern Africa, most important being *H. miniata*, *H. flaccida*, and *H. pallida*. *Homeria miniata* is probably native only along the west coast from the Cape Peninsula to Namaqualand, where it is a common, sexually reproducing diploid species. It is now frequent in pastures, vineyards, disturbed roadsides, and abandoned fields well to the east of its native range. The weedy forms are often sexually sterile, sometimes triploid or tetraploid, and they reproduce by means of numerous tiny cormlets produced round the parent corm and at the lower nodes. Wild forms produce only a few quite large cormlets around the main corm.

A second weedy species is *H. flaccida*, which is extremely common, especially in seasonally flooded land on the Cape Flats. It is poisonous and avoided by stock and so, in overgrazed areas near towns, becomes very conspicuous. It is not often found in plowed areas and is apparently easily eradicated, perhaps because it has a poor capacity for vegetative reproduction.

The third important weedy species is *H. pallida*, a plant native in the upper karoo and the highveld grasslands of Natal, the Transvaal, and Orange Free State. In this species there are two distinct cytological races, one with $n = 6$ and one with $n = 4$. The second is derived from the $n = 6$ cytotype, which is basic in *Homeria*, and all of the weedy forms of *H. pallida* I have examined have the derived $n = 4$. *Homeria pallida* has become a weed in part because this very toxic species is avoided by grazing animals. Thus in areas that have been overstocked, *H. pallida* populations grow very large. However, the species is autogamous and the $n = 4$ cytotype is a ring-forming complex heterozygote (Goldblatt, 1980b). These features surely contribute to its success as a weed. While *H. pallida* is common in the Orange Free State, the species is often rare in other parts of its range, and in the Transvaal and Natal is usually restricted to vleis and seeps.

Locally, other species of *Homeria* may also appear to be weeds. This is because, like *H. flaccida* and *H. pallida*, the plants are toxic and avoided by grazing animals. In the absence of competition in grazed areas, they then multiply to an unusual extent. Thus, *H. collina* appears as a weed on the slopes of Devils Peak in Cape Town where buck and deer avoid it. *Homeria schlechteri* is very abundant between Springbok and Okiep in Namaqualand, where much of the natural plant cover has been destroyed.

Homeria has been introduced into Australia, where two species, *H. miniata* and *H. collina* (often misidentified as *H. breyniana* var. *aurantiaca*, i.e., *H. flaccida*), have become established, and are weeds causing serious problems.

In undisturbed habitats the only species normally found in large numbers is *H. miniata*, where populations stretch for mile upon mile in Namaqualand. When other species are found blooming in great numbers, this is a response to some disturbance, fire being the most common stimulant. Species native to the poor,

TABLE 2. Soil preferences of *Homeria* species in the Cape Floristic Region and adjacent areas. The asterisk indicates species not entirely restricted to the soil type indicated.

Species Characteristic of Sandy Soils	Species Characteristic of Clay Soils
<i>H. autumnalis</i>	<i>H. bifida</i>
<i>H. bolusiae</i>	<i>H. bulbillifera</i> subsp. <i>anomala</i> *
<i>H. brachygyne</i>	<i>H. comptonii</i>
<i>H. britteniae</i>	<i>H. elegans</i>
<i>H. bulbillifera</i> subsp. <i>bulbillifera</i>	<i>H. fenestra</i>
<i>H. cedarmontana</i>	<i>H. longistyla</i> * (also very rocky alluvial sites, occasionally sand)
<i>H. collina</i> *	<i>H. marlothii</i>
<i>H. cookii</i> (within the Cape Region)	<i>H. miniata</i> (within the Cape Region, also sand in Namaqualand)
<i>H. flaccida</i>	<i>H. odorata</i>
<i>H. flavescens</i>	<i>H. ramosissima</i>
<i>H. fuscomontana</i>	<i>H. spiralis</i>
<i>H. galpinii</i>	<i>H. tricolor</i>
<i>H. minor</i>	
<i>H. ochroleuca</i>	
<i>H. patens</i>	
<i>H. tenuis</i>	
<i>H. vallisbelli</i>	

sandstone-derived soils in the southwestern Cape often only bloom after fires. In this category are *H. galpinii*, *H. cedarmontana*, *H. autumnalis*, *H. ochroleuca*, and *H. cookii*. Several other species behave in the same way, e.g., *H. tenuis*, *H. collina*, *H. minor*, but they also flower where vegetation cover is sparse without apparent disturbance. Clearing of the vegetation by means other than fire has a similar effect in many species.

Soil type has an important influence on the distribution of *Homeria*. As has been noted for many genera in the Cape Floristic Region, species tend to be restricted either to the characteristic coarse sandy soils, mostly of montane habitats, or to the heavy, more fertile clay soils of the valleys and plains (Dahlgren, 1968; Rourke, 1972; Goldblatt, 1978). This is marked in *Homeria*, where most species are restricted to one soil type. As already mentioned, the strongly fire-responsive species are restricted to sandstone soils. In the Cape Floristic Region and adjacent areas, 16 species are limited to sandy soils (Table 2) while 11 are characteristic of or restricted to heavy clay soils.

REPRODUCTION

Most species of *Homeria* are strongly outcrossing, with self-incompatibility the rule as in other genera of subtribe *Homeriinae*. Self-compatibility has been observed in the following: *H. collina*, *H. marlothii*, *H. britteniae* and *H. flavescens* (one population examined of each), in all four populations of *H. tenuis* and *H. minor* studied, and in plants of several populations of *H. pallida* ($n = 4$ form). In all of these species pollen is shed directly onto the stigmas, thus effecting self-fertilization. Other species in which pollen and stigmas are in direct contact are nevertheless strongly self-incompatible. Pollination in the genus is accomplished by insects and is usually very effective, with most plants of a species producing abundant seed.

TABLE 3. Naturally occurring hybrids recorded in *Homeria*. All examples are intrasectional.

<i>H. flaccida</i> × <i>H. collina</i> —sterile, 5 <i>n</i> (Goldblatt, 1973)
<i>H. ochroleuca</i> × <i>H. collina</i> —sterile, 3 <i>n</i>
<i>H. collina</i> × <i>H. longistyla</i> —sterile, 3 <i>n</i>
<i>H. comptonii</i> × <i>H. longistyla</i> —no data
<i>H. bifida</i> × <i>H. odorata</i> —sterile, 2 <i>n</i>

Interspecific hybridization occurs with unusual frequency, and it is usual, rather than exceptional, to find some hybrid individuals wherever species of *Homeria* occur together. These hybrids (Table 3) are sterile, often owing to differences in ploidy levels in parent species. Natural hybrids between *H. bifida* and *H. odorata*, both $n = 6$, grown in the greenhouse, and artificial hybrids between *H. elegans* and *H. miniata*, also both $n = 6$ (Goldblatt, 1973), are also sterile, but the reasons here are not known.

POLLINATION

There appears to be a close relationship between general flower form and pollinating agent. My field observations have indicated the following trends. Species which tend to have the tepals deeply cupped and thus at least partly or entirely include the stamens and style branches usually have a strong, rich, rather overripe scent and are pollinated by flies; sometimes a single fly species appears to be the only visitor. These species secrete nectar at the base of the outer tepal or, in the case of *H. ochroleuca*, rather randomly in the mid-claw region of both the inner and outer tepals. In both cases, the nectar is readily available for lapping/licking. Species on which I have observed fly pollination are *H. collina*, *H. comptonii*, *H. ochroleuca*, and *H. odorata*.

In contrast, species with tepals either spreading from the base or in which the tepal claws are held close to the filament column, with the tepal limbs held horizontally, and the anthers and style branches carried well above the tepals are scentless and usually visited by Hymenoptera, mainly bees but also wasps. These species secrete nectar which is concealed in the cavity formed by the tepal claw and filament column. Bees, which I have seen working in large numbers on species with this type of flower, generally alight on the top of the stamen column and rapidly gather pollen. Only occasionally do individual bees probe the base of the filament column searching for nectar. This pattern was noted for three similar and closely-related species, *H. miniata*, *H. bifida*, and *H. spiralis*.

CONSERVATION

Species of *Homeria* are generally quite common within their ranges and form populations comprising large numbers of individuals. Many grow in places unsuitable for agriculture or land development and thus their future seems secure over much of their ranges. As already mentioned, several species have weedy tendencies and reproduce rapidly, which adds to their security. The few very local species such as *H. cedarmontana*, *H. autumnalis*, *H. fenestrata* and *H. pendula* grow in areas remote from human activity and on land unsuitable for

TABLE 4. Chromosome numbers in *Homeria*. Collection and voucher data or previous reference are given in Goldblatt (1980b), but data for a few original counts given here are listed in Table 5. Species marked with an asterisk were previously uncounted.

Species	2n	Species	2n
* <i>H. autumnalis</i> Goldbl.	12	<i>H. longistyla</i> Goldbl.	12
<i>H. bifida</i> L. Bolus	12, 12 + 4B	<i>H. marlothii</i> L. Bolus	24
<i>H. brachygyne</i> Schltr.	12	<i>H. miniata</i> (Andr.) Sweet	12 (18), (24)
<i>H. britteniae</i> L. Bolus	12, 24	<i>H. minor</i> (Ecklon) Goldbl.	12
* <i>H. bolusiae</i> Goldbl.	12	<i>H. ochroleuca</i> Salisb.	12, 24, 24 + 2-3B
<i>H. bulbifera</i> Lewis	12, 12 + 1B, 18, 24	<i>H. odorata</i> L. Bolus	12
<i>H. cedarmontana</i> Goldbl.	12	<i>H. pallida</i> Baker	12, 8
<i>H. collina</i> (Thunb.) Salisb.	24	* <i>H. patens</i> Goldbl.	12
<i>H. comptonii</i> L. Bolus	12	<i>H. pendula</i> Goldbl.	12
<i>H. cookii</i> L. Bolus	12, 24, 36	<i>H. ramosissima</i> Schltr.	12
<i>H. elegans</i> (Jacq.) Sweet	12	<i>H. schlechteri</i> L. Bolus	12
<i>H. fenestrata</i> Goldbl.	12	<i>H. spiralis</i> L. Bolus	12
<i>H. flaccida</i> Sweet	24, 36	<i>H. tenuis</i> Schltr.	10, 9
* <i>H. flavescens</i> Goldbl.	9, 12	<i>H. tricolor</i> Lewis	12
* <i>H. fuscomontana</i> Goldbl.	12	<i>H. vallisbelli</i> Goldbl.	12
<i>H. galpinii</i> L. Bolus	24		

cultivation, so are certainly under no threat to their continued existence. Only two species, *H. elegans* and *H. comptonii*, appear exceptions to these observations. Both grow on rich clay soils in the Caledon-Bredasdorp area, and their populations have been severely reduced in size and number by land cultivation. They are probably also adversely affected by the local spraying of weed killers which is occurring on an accelerated scale. *Homeria elegans* is on the point of becoming endangered and in fact now is known from only three small populations, although others probably exist. *Homeria comptonii* is only slightly less threatened, but this species has a wider range and also grows on marginal land not likely ever to be cultivated. Lastly, *H. odorata*, endemic to the Nieuwoudtville area, is potentially endangered over much of its range as it grows mainly on deep clay soil which could at the whim of landowners be ploughed for growing a crop. If such activity occurred, the species would become restricted to a few rocky places surrounding the arable area.

CYTOLOGY

Chromosome cytology of *Homeria* is well known (Goldblatt, 1980a). There is at least one count for every species (Table 4), the first reports for five, *H. bolusae*, *H. patens*, *H. autumnalis*, *H. fuscomontana* and *H. flavescens*, being presented here (Table 5), together with some new counts in other species. Basic number is clearly $x = 6$ and the majority of species are diploid, a few of these with polyploid populations. The basic karyotype comprises large, acrocentric chromosomes ranging in size from 8-5 $m\mu$.

TABLE 5. Locality (all South Africa) and voucher data for original counts in *Homeria* cited in this paper. Chromosome number (diploid) is given for each locality. All collections are housed at MO.

<i>H. autumnalis</i> .	Cape Province: Elandskloof, <i>Goldblatt 5504</i> (12).
<i>H. bulbifera</i> subsp. <i>bulbifera</i> .	Cape Province: Franskraal, <i>Goldblatt 5366</i> (10).
<i>H. cedarmontana</i> ,	Cape Province: Cedarberg, Middelberg, <i>Goldblatt 5146</i> (12).
<i>H. flavescens</i> .	Cape Province: Cedarberg, Krom Rivier turnoff, <i>Goldblatt 4058A</i> (9). Dwars Rivier, <i>Goldblatt 4817</i> (9—previously reported as <i>H. tenuis</i> in <i>Goldblatt</i> (1980a)).
<i>H. fuscomontana</i> .	Cape Province: Swartruggens, road to Katbakkies, <i>Goldblatt 5344</i> (12).
<i>H. bolusiae</i> .	Cape Province: Near Bulshoek, Clanwilliam district, <i>Goldblatt 5660</i> (12).
<i>H. galpinii</i> .	Cape Province: Fernkloof, Hermanus, <i>Goldblatt 5175</i> (12).
<i>H. miniata</i> .	Cape Province: Krom Rivier farm, <i>Goldblatt 5124, 5671</i> (12). Top of Pakhuis Pass, <i>Goldblatt s.n.</i> (12). Near Berg River bridge, <i>Goldblatt s.n.</i> (12).
<i>H. patens</i> .	Cape Province: Flats east of Pakhuis Pass, <i>Goldblatt s.n., 5159</i> (12).
<i>H. tenuis</i> .	Cape Province: Top of Pakhuis Pass, <i>Goldblatt 5155</i> (8). Near Leipoldt's Grave, Pakhuis, <i>Goldblatt 4805</i> (9). Elands Kloof, <i>Goldblatt 5246</i> (9). Middleberg, Cedarberg, <i>Goldblatt 5132</i> (9). Driehoek road, Cedarberg, <i>Goldblatt 5122, 5674</i> (10).

Polyploidy is evidently a significant factor in the evolution of the genus. Three species are polyploid: *H. collina* and *H. marlothii* are tetraploid, $2n = 24$; and *H. flaccida* has populations with $2n = 24$ and 36 . Three species, *H. bulbifera*, *H. britteniae*, and *H. galpinii* have diploid and tetraploid populations, and another, *H. cookii*, has diploid, tetraploid, and hexaploid populations.

Aneuploidy has been found in three species: *H. pallida* has cytotypes with $n = 6$ and $n = 4$; *H. tenuis* has $n = 5$ and $n = 4$ and several populations with $2n = 9$; while *H. flavescens* has $2n = 9$. Cytotypes with $2n = 10$ have one pair of metacentric chromosomes, those with $2n = 9$ have three metacentrics, and those with $2n = 8$ have two pairs of metacentrics. This pattern indicates that the derived karyotypes may have originated through Robertsonian type translocations (Jones, 1977, 1978) as postulated (Goldblatt, 1979a) in the related genus *Galaxia*. Meiosis is regular in the few outcrossing species examined, all $x = 6$ but *H. tenuis*, and the aneuploid cytotypes of *H. pallida* and *H. flavescens* are complex heterozygotes in which the chromosomes form complete rings or chains. Segregation at meiosis is alternate (Goldblatt, 1980b).

RELATIONSHIPS

The relationships of *Homeria* have been rather extensively dealt with in an earlier paper (Goldblatt, 1980a), in which I develop in detail my belief that *Homeria* was derived from *Moraea*-like ancestors. This hypothesis needs only be summarized here. The general morphology of *Homeria*, with its bifacial, channeled leaf and single-internode, apically rooting corm make it clear that the genus is related to *Moraea*, *Hexaglottis*, *Galaxia*, and a few other genera which share these same characteristics. This group forms a natural alliance within the Iridaceae-Iridoideae, and has been treated as a subtribe, *Homeriinae* (Goldblatt, 1971a; emend. 1976a). Within this subtribe I have regarded *Moraea* as the least specialized, and thus most like the ancestor of the group. In *Moraea* the most primitive species have several leaves, unlimited branching, generalized flowers, with

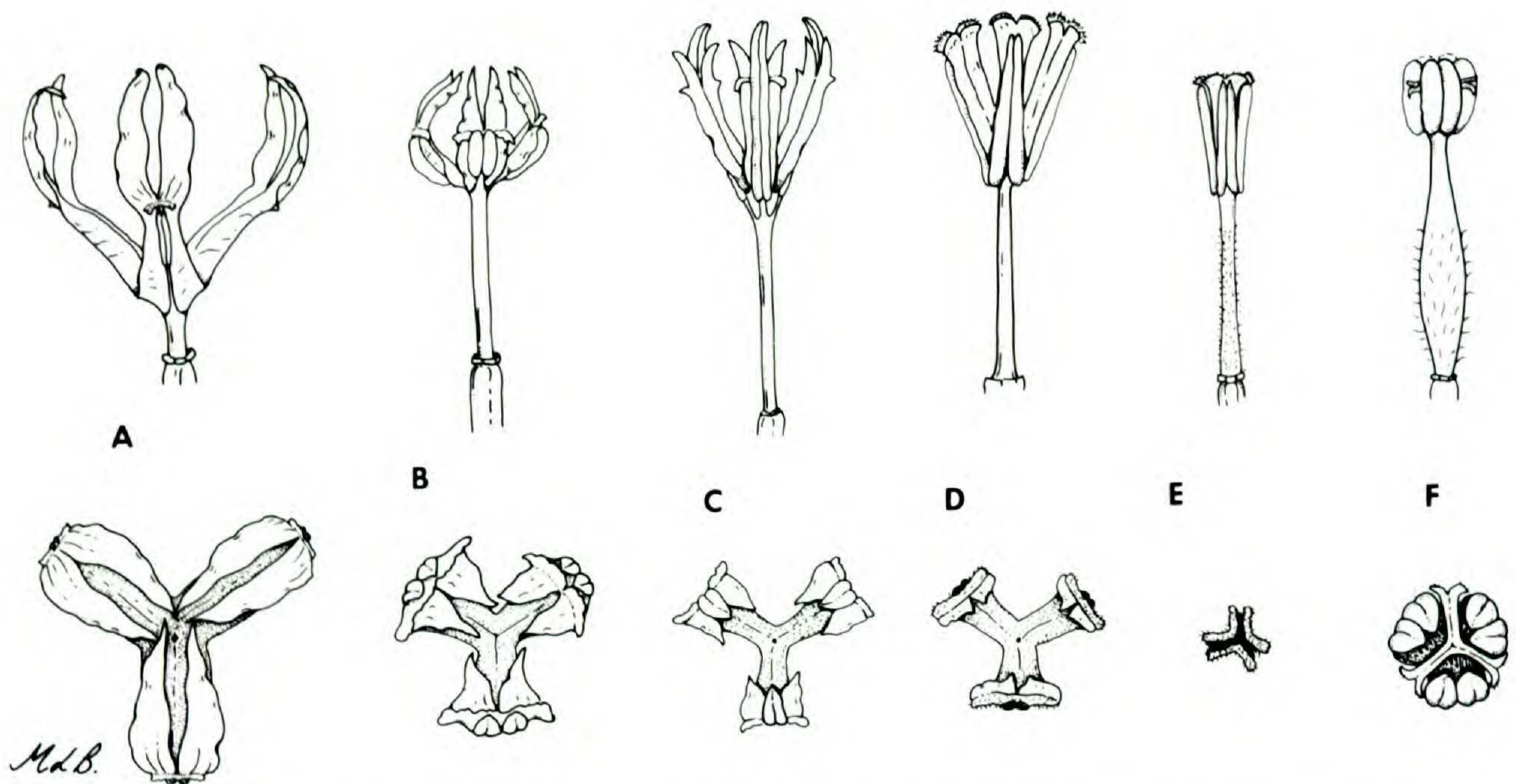


FIGURE 3. Side and top view of the stamens and style branches of *Moraea* and *Homeria*.—A. *Moraea bipartita*.—B. *Homeria schlechteri*.—C. *H. pallida*.—D. *H. ochroleuca*.—E. *H. longistylata*.—F. *H. miniata* (enlarged, but drawn at different scales).

subequal tepals, large petaloid style branches (Fig. 3A) and either free, but contiguous, or basally united filaments, and a basic chromosome number of $x = 10$. Specialization in several lines in *Moraea* has led to a single leaf, limited or no branching, specialized flowers with highly differentiated inner and outer tepals, occasionally a reduction of the petaloid style branches, and progressive decreases in chromosome number, which appears to have stabilized independently in at least two lines at $n = 6$.

In vegetative features *Homeria* is almost identical to *Moraea*, so that it is often impossible to tell them apart. The flower of *Homeria*, however, has an appearance which makes it possible at a glance to recognize it. The tepal claws usually form a cup around the stamen-style branch apparatus, with the limbs of both tepal whorls spreading horizontally. The filaments are usually entirely united (sometimes free near their apex) (Figs. 3B–3F) and the style branches are either narrowed (but with short crests and thus *Moraea*-like in miniature) (Figs. 3B–3C) or reduced to short flat lobes without crests and often obscured by the anthers (Figs. 3D–3F). Basic chromosome number in *Homeria* is $n = 6$.

The *Homeria*-type flower described above has probably evolved at least four times: in the genus *Moraea*, in subgenus *Visciramosa* (*M. elsiae*), and in subgenus *Vieusseuxia* (*M. polyanthos*, *M. speciosa*); in the genus *Rheome*, recently segregated from *Homeria* (Goldblatt, 1980a) and perhaps related to *Moraea* subgenus *Moraea*; and in *Homeria* which, though I believe derived from *Moraea*, forms a distinctive natural assemblage whose immediate ancestors are no longer extant.

EVOLUTION

Within *Homeria* the main trends of evolution are:

1. Reduction in leaf number, several leaves being regarded as primitive. This

pattern is repeated in three lines, sections *Namaquana*, *Homeria*, and *Conanthera*.

2. Shift in position of the lowermost (or only) leaf from a basal to an above-ground position. This is also repeated in at least three lines, only section *Stipanthera* showing no variation in leaf number or basal insertion. Above-ground insertion is regarded as derived.

3. Union of filaments, which are partially free towards the apex in sections *Namaquana* and *Stipanthera* (except forms of *H. cookii*) and entirely united in sections *Homeria* and *Conanthera*, except for forms of *H. flavescens* in which the free parts of the filaments may be a regression to an ancestral condition.

4. Reduction of the style branches and crests. Well-developed and flat, diverging style branches with distinct crests are typical of sections *Namaquana* and *Stipanthera* and of many species of section *Homeria*. Within the latter section there are two trends in the reduction of the style branches. One involves suppression of branching, which typically occurs at the anther base, but in *H. minor* is towards the midline of the anthers, and in *H. longistyla*, the style divides at the anther apex or beyond, or may not branch at all. A second trend is for the branches to shorten, and become bilobed, while the crests are suppressed (*H. vallisbelli*).

In section *Conanthera* the style branches are always short, and bilobed, and lack crests. The anthers instead of diverging are contiguous, and conceal the style branches, only the apices of which emerge between or above the anthers.

Among the criteria listed section *Namaquana* stands out as most unspecialized, while the three other sections appear to have diverged early from basal stock, along different lines. Each of these has a mixture of derived and primitive features. Sections *Homeria* and *Conanthera* exhibit a large degree of internal specialization with rather similar end points achieved by convergence of vegetative and floral characters in the most specialized species of each.

SUBGENERIC CLASSIFICATION

It seems useful to provide a subgeneric classification for *Homeria*, giving formal recognition to the main morphological groupings. I am accordingly establishing four sections (Table 1).

1. Section *Namaquana* Goldbl., sect. nov.

Folia plures vel solitaria. Tepala unguiculata vel non. Filamenta libera in parte superiore; antherae arcuatae. Rami styli divergentes, arcuati, cristae productae.

Leaves several or solitary in *H. bolusiae*. Outer spathe sheathing but free distally in *H. ramosissima*. Tepals not clawed or with short claws appressed to the filament column. Filaments free in the upper part; anthers arched outwards. Style branches well developed, arched, the broad stigma appressed to the anther and stigmatic laterally, the crests well developed, horizontal. Chromosome number $2n = 12$.

Type species: *H. schlechteri* L. Bolus.

The section comprises three species which occur along the west coast from

near Clanwilliam to the Springbok area of Namaqualand. Distribution of the species is complementary. All are diploid. The many leaves, unrestricted branching, apically free filaments and well-developed style branches mark section *Namaquana* as primitive in the genus. The stellate flowers in *H. schlechteri*, the tepals of which lack claws, are probably derived, the clawed condition presumably being ancestral.

2. Section *Stipanthera* Goldbl., sect. nov.

Folium solitarium, basale. Tepala unguiculata, unguis breves vel longi et cupulati, filamentis inclusis. Filamenta libera in parte superiore vel omnino connata; antherae rectae, divergentes. Rami styli longi, divergentes, cristae distinctae.

Leaf solitary, always basal. Outer spathe sheathing. Tepals clawed, the claws short and appressed to the filament column, or long and enclosing filaments in *H. britteniae*. Filaments usually free in the upper 1–2 mm, but entirely united in some populations of *H. cookii*; anthers straight. Style branches long, narrow, diverging, with distinct short crests. Chromosome numbers $2n = 12, 24, 36, 8$.

Type species: *H. cookii* L. Bolus.

Section *Stipanthera* comprises four species, and includes two wide ranging species *H. cookii* and *H. pallida*, and the more localized *H. marlothii* and *H. britteniae*. The distribution of the section encompasses almost the whole range of the genus, but it does not extend to the extreme southwestern Cape nor into Namaqualand. The ranges of the species are predominantly complementary, with limited sympatry between *H. cookii* and *H. pallida* in the northern karoo.

The section is specialized in having a single leaf, this always basal, but primitive in having apically free filaments and well-developed style branches.

3. Section *Homeria*

Leaves several in *H. cedarmontana*, 2 in *H. ochroleuca*, but typically solitary, either basal or inserted well above ground. Spathes entirely sheathing. Flowers varied; tepals always clawed, the claws usually forming a cup or tube to enclose part or all of the stamens. Filaments entirely united, often papillate or pubescent, but free in the upper part in *H. flavescens*; anthers straight, diverging or parallel. Style branches either well developed, with distinct, short crests, or the crests vestigial to absent, or the branches suppressed in *H. longistyla*. Chromosome numbers $2n = 12, 24, 36, 10, 9, 8$.

Type species: *H. collina* (Thunb.) Salisb.

Section *Homeria* is the largest in the genus, comprising some 15 species. Among these are some of the most striking representatives in the genus, such as the large-flowered *H. elegans* and *H. comptonii* with maculate tepals. Species range from the many-leafed Cedarberg endemic, *H. cedarmontana*, to the dwarf tiny-flowered *H. tenuis*. Typically species of section *Homeria* have a single leaf, either basal, or inserted well above ground, as in the majority of species. Differences between many species are small and difficult to distinguish in dry material, as they are mainly in the structure and orientation of the tepals and the form of the tepal cup. The filaments are entirely united, except in *H. flavescens*, possibly

a regressive character, although this species may be misplaced here. Section *Homeria* is concentrated in the southwestern Cape, with extension northward to Nieuwoudtville, and eastward to Grahamstown, almost entirely within the Cape Floristic Region. Speciation is marked along the west coast, mainly in the Cedarberg-Cold Bokkeveld ranges where nine species occur in the area between Nieuwoudtville and Gydo Pass, six of which are endemic, including the cytologically interesting ring-forming complex heterozygote populations of *H. flavescens* and *H. tenuis*.

There is a trend in the section for reduction of the style branches, which become fairly short in *H. minor* and are entirely suppressed in some forms of *H. longistyla*. Crests are uniformly small where present, but are difficult to detect in *H. ochroleuca*, lacking in *H. longistyla*, *H. vallisbelli* and *H. flavescens*. This is accompanied by a tendency for anthers to become parallel, and even coherent, round the style or its branches.

4. Section *Conanthera* Goldbl., sect. nov.

Folia plures vel solitaria, basalia vel supra terram inserta. Tepala unguiculata. Filamenta omnino connata; antherae cohaerentes, ramis styli tectis. Rami styli breves, bifurcati, apices interantheras extensi, cristae deficientes.

Leaves several to solitary, the lowermost basal or inserted above ground in *H. fenestrata* and *H. brachygyne*. Spathes entirely sheathing. Tepals clawed, the claws either short and appressed to the lower part of the filament column, or long, and forming an open cup round the filaments, *H. fenestrata*, *H. tricolor*, or including the anthers as well, *H. odorata*. Filaments united, the column straight or bulbous at the base; anthers short, parallel, cohering, initially covering the style branches but collapsing after anthesis and the style branch apices extending between or above the anthers. Style branches short, broad, bilobed, lacking crests (or vestigial and obscure). Chromosome numbers $2n = 12(-24)$.

Type species: *H. miniata* (Andr.) Sweet.

Section *Conanthera* includes species with several leaves, *H. miniata*, *H. pendula*, *H. spiralis* and *H. fenestrata*, and single leafed-species, *H. bifida*, *H. odorata*, *H. brachygyne* and *H. fuscomontana*, while *H. tricolor*, typically solitary leafed, may also have up to three leaves. Species are all small flowered, except the striking Kamiesberg endemic, *H. pendula* which has large, pendant flowers with reflexed tepals. Species of the section share stamen and style branch characters, and are readily recognized by their short coherent anthers, short, broad bilobed style branches, initially hidden by the anthers. After anthesis the anthers collapse and the apices of the style branch lobes are visible either between or beyond the shrunken anthers. The style branches lack visible crests and appear quite flat to the naked eye. There is an interesting specialization in the filament column of *H. miniata*, *H. pendula* and *H. bifida*, in which the base is enlarged and bulbous.

The section is concentrated in the southwestern karoo and Namaqualand. *H. miniata* is the most widespread, ranging from northern Namaqualand to the Cape Peninsula, and east into the upper karoo. Other species have much more restrict-

ed ranges, with *H. spiralis*, *H. odorata*, *H. pendula* and *H. fenestrata* very local in distribution.

MORPHOLOGY

CORM

The corm is of the single-internode type found in all members of subtribe *Homeriinae*, in which roots are produced from the lower part of the apical bud which is situated at the top of the corm. The tunics of *Homeria* are distinctive, consisting of very tough black or very dark brown layers perforated at regular intervals. This type of tunic is also found in several species of *Moraea*, notably subgenus *Moraea* sect. *Deserticola* and subgenus *Vieuseuxia* section *Polyanthes*. Corm size varies in the genus from the very large corms of *H. marlothii*, some 35 mm in diameter, to the very small ones of *H. tenuis*, sometimes no more than 5 mm in diameter.

LEAVES

The produced leaves are bifacial and of the *Moraea* type (Goldblatt, 1976b), usually linear and channeled. Leaf number varies from several in *H. schlechteri* and *H. ramosissima*, a presumably primitive condition, to few (2–3) in *H. miniata*, *H. spiralis*, *H. fenestrata*, *H. cedarmontana*, and *H. pendula*, to solitary in the majority of species. *Homeria ochroleuca* and *H. tricolor* are unusual in the genus, having populations with solitary or more than one leaf.

Point of insertion of the lowermost (or only leaf) is an important taxonomic character in the genus. Insertion ranges from at or near ground level to well above ground. The character is constant within most species, and shows little variation except in *H. bulbifera*, which typically has a basal leaf; however, inland populations growing on clay tend to have the leaf inserted somewhat above ground. Position of the leaf insertion is used frequently in the key and in defining species. Within section *Homeria* there is a large natural group of species with above-ground leaf insertion, including *H. flaccida*, *H. collina*, *H. minor*, *H. ochroleuca*, *H. galpinii*, *H. tenuis*, and *H. longistyla*. This is characteristic also of *H. fenestrata*, *H. fuscomontana* and *H. brachygyne*, section *Conanthera*, and *H. bolusiae*, section *Namaquana*.

The produced leaf, or more simply the leaf, is generally quite distinct from other foliar appendages. These are: (1), cataphylls, transparent and membranous structures which sheath the underground part of the stem and emerge only shortly above ground; and (2), entirely sheathing, but herbaceous structures borne above the leaf or leaves, at nodes on the stem. These strongly resemble the spathe valves or bracts which enclose the inflorescences, and are termed stem bracts here. In the less specialized species the stem bracts are not always clearly distinct from the leaves and have a free apical portion. They are thus actually short leaves rather than bracts. *Homeria schlechteri* and *H. ramosissima* are two species where the leaf stem bract distinction is blurred. In *H. minor* the single bract leaf is often rather leaflike, but so much shorter than the produced leaf that *H. minor* is treated as a solitary leafed species.

STEM

Each corm produces only a single stem, which is normally erect or slightly inclined. The stem may be straight, but in species with the leaf inserted above ground, the stem is usually flexed above the node. The branching pattern is also an important characteristic of species. Branches may be held close to the main axis, with the inflorescences diverging outward, e.g., *H. odorata*, *H. bifida*, *H. marlothii*, or the branches may diverge, with upright inflorescences, e.g., *H. cookii*. Branches are numerous and very short in species like *H. bifida* and *H. marlothii*, giving plants a characteristic appearance. In other species, branches are fewer, and longer, and often borne on a flexuose stem, e.g., *H. fenestrata* and *H. spiralis*.

INFLORESCENCE

Individual inflorescences are enclosed in paired, opposed sheathing bracts, called spathes. Each inflorescence contains several flowers, produced serially over a two- to three-week or longer period. The outer spathe is usually about half to two-thirds as long as the inner. In several species, apparently unrelated, the inner spathe elongates during flowering to enclose the developing capsules, functioning in some protective role. This condition occurs conspicuously in section *Conanthera* in *H. tricolor* and in section *Homeria* in *H. comptonii*, *H. elegans*, *H. minor*, *H. vallisbelli*, and *H. tenuis*.

FLOWERS

The six tepals are free with those of the outer whorl somewhat larger than the inner. The tepals are divided into a narrow lower part, the claw, and a broader upper part, the limb, and there is a clear angle or knee dividing the claw from the limb. Both inner and outer whorls are identical in orientation. *Homeria schlechteri* is unusual in that its tepals show no division into limb and claw. Here the tepals spread horizontally from the base. The difference between limb and claw is obscure in the two closely related species *H. comptonii* and *H. elegans*.

In several species the tepal claws together form a cup, partly or entirely including the filaments and stamens. The presence and nature of this cup is an important specific characteristic, but is usually difficult to determine in dried plants unless the flowers are pressed with great care. In others, the tepal claws, usually rather short, are erect and held closely against the filament column. A small cell is thus formed between the tepal and filament base which conceals the nectar. This condition is accompanied in several species of section *Conanthera* with a bulbous enlargement of the base of the filament column, as in *H. miniata*, *H. bifida*, *H. spiralis*, and *H. pendula*.

Nectar guides are present in most species, and are either deep yellow to orange patches of color, often outlined in dark green, or dense patches of small dark spots, located at the base of the tepal limbs, and sometimes extending down the tepal claws. Some populations of *H. comptonii* lack nectar guides, while in others there are dark green marks on the outer or both tepal whorls, sometimes large enough to fill the middle third of the tepal. *Homeria elegans* also typically has very large dark green markings in the mid to upper third of the outer tepals.

Nectaries are usually confined to a small area at the base of the outer tepals. These are clearly visible in living plants but obscure in dried specimens. *Homeria ochroleuca* is the only exception: it lacks discrete nectaries, but nectar is secreted over a broad central area of the claws of all tepals, a feature apparent only in living flowers by the presence of droplets of nectar.

The length of time flowers last is an important specific character, but one on which little data is available. Flowers of most species last a single day, opening and fading at constant times. Species of section *Namaquana* are unusual in flowering early in the day, the flowers lasting until about 1 P.M. In section *Conanthera*, species such as *H. miniata*, *H. bifida*, and others flower late, the flowers opening after midday and fading in late afternoon. Longer-lasting flowers are found in section *Homeria* in which the flowers of some species such as *H. collina*, *H. ochroleuca*, *H. flaccida*, *H. longistyla*, *H. collina*, and *H. elegans* last two days, fading on the third in all these except *H. longistyla*.

ANDROECIUM

Filaments are united entirely in the majority of species, but are free in the upper 1–2 mm in section *Namaquana* (Fig. 3A) and in *H. pallida* (Fig. 3B), and most populations of *H. cookii* and *H. britteniae* of section *Stipanthera*. The filament column varies in shape from cylindrical and smooth or papillate-pubescent below, to tapering from the base to the apex (*H. collina*, *H. elegans*), to bulbous in the lower part in several species of section *Conanthera* (*H. miniata*, *H. spiralis*, *H. pendula*, and *H. bifida*) (Fig. 3F).

Anthers are oblong to linear and appressed to the style branches. Depending on the orientation of the style branches, the anthers may be erect and contiguous to widely diverging. They are usually straight, but if they exceed the style branches they tend to curve inward after anthesis.

GYNOECIUM

There is little variation in the ovary in *Homeria* except in length, which ranges from 5 mm in *H. tenuis* to over 25 mm in *H. flaccida*. The ovary is usually exerted from the spathes, but included in *H. ramosissima*, *H. comptonii*, *H. elegans*, *H. minor*, *H. tenuis*, *H. flavescens*, and often in *H. cookii* and *H. tricolor*.

The slender style, concealed by the filament column, usually divides just near the apex of the column, forming three flat branches. The structure of the branches ranges from fairly broad and petaloid with paired crests extending well above the stigmas to narrow with short vestigial crests, to terete and bilobed and without crests, and is an extremely important taxonomic character in *Homeria*.

The most elaborate style branches are found in section *Namaquana* in which the broadly flattened arcuate branches are topped by long, horizontal crests. The stigma lobe is wide, and held against the base of the crests with only the sides which extend beyond the crests receptive (Fig. 3B). Almost as elaborate are the style branches of *H. cookii* and *H. marlothii* (section *Stipanthera*), but the branches are rather narrower and straight (Fig. 4C). In section *Homeria* the branches are always straight and usually about as wide as the anthers, and the

crests are short, no more than 1–2 mm, (Fig. 3D) or obscure to absent (*H. ochroleuca* and *H. longistyla*). The stigma, often bilobed, is also small. In two specialized species of the section, *H. minor* and *H. longistyla*, (Fig. 3E) the style divides, not at the apex of the filament column, but well above the anther base. In *H. longistyla* the style branches towards the anther apex, and the branches are short, sometimes barely developed (Fig. 21). In section *Conanthera* the style branches are apparently further reduced to small flat bilobed structures (Fig. 3F). Here the ends of the two lobes of each branch are stigmatic and emerge between or above the connate anthers. There is no development of any crest or crestlike structure.

FRUIT

The fruit of *Homeria* is a loculicidal capsule which is generally oblong to linear, and cylindric to slightly 3-lobed in section. Capsules are generally exerted from the spathes and 10–20 mm long. Capsules of *H. collina* and *H. flaccida* are distinctive in their length, between 25 and 55 mm long, and in having a well-developed beak which is ca. 1 mm long and obtuse in *H. collina*, and ca. 2 mm long and acute in *H. flaccida*. The capsules of *H. comptonii* and *H. elegans* are also unusually long, 25–30 mm, and are enclosed in the spathes.

Seeds are brown, angular, and range in size from ca. 1 mm in diameter to 2 mm in large-capsuled species such as *H. cedarmontana*. The angles of the seeds have membranous transparent ridges, which are too poorly developed to be called wings. Apart from size, there is nothing to distinguish the seeds of different species.

SYSTEMATICS

Homeria Ventenat, Dec. Gen. Nov. no. 2, 1808. TYPE SPECIES: *H. collina* (Thunb.) Salisb.

Moraea L. sensu Thunb., Diss. *Moraea* 1787, pro parte.

Plants small to medium, deciduous perennial herbs. *Rootstock* a single internode corm, rooting from the apex, with tunics of tough black (to dark brown) reticulate layers. *Leaves* several to solitary, inserted basally or on the aerial part of the stem, linear, canaliculate, straight, or coiled in the upper part. *Stem* erect, straight, or flexuous, usually branched, sometimes repeatedly smooth, or in one species, papillate, bearing reduced leaves, or sheathing bracts from the upper nodes. *Inflorescences* several flowered, enclosed in paired, opposed herbaceous bracts or spathes, the outer usually $\frac{1}{2}$ – $\frac{2}{3}$ the inner; in some species the inner spathes elongating to enclose developing fruits. *Flowers* usually yellow, pink, or orange, rarely white, with nectar guides at the base of the limbs of both tepal whorls, usually yellow, or large and green in two species; nectaries located at the base of the outer tepals in most species, rarely absent or diffuse on the tepal claws; tepals free, subequal, or the inner slightly smaller, usually divided into limb and claw; limbs horizontal, or reflexed, the claws erect, and pressed to the filaments or forming a narrow to wide cup. *Stamens* opposite the outer tepals; filaments either united entirely around style, or free in the upper 1–2 mm; anthers

pressed against the style branches, erect or diverging, often exceeding the stigmas and curved inward. *Ovary* oblong-linear; style slender, concealed by the filament column, dividing at the apex of the column, rarely above the base of the anthers; *style branches* flattened, either with broad transverse stigmas and paired stylar crests, or bilobed apically, without crests and stigmatic at the ends of the apical lobes. *Fruit* a loculicidal capsule, cylindrical, flat topped, or beaked. *Basic chromosome number* $x = 6$; diploid numbers $2n = 12, 24, 36, 10, 9, 8$.

Number of species: 31.

Distribution: South Africa, eastern and central Namibia (South West Africa), Lesotho and southern Botswana, concentrated in the winter rainfall parts of the southern and western coasts of the Cape Province, and adjacent parts of the karoo.

KEY TO THE SPECIES

1. Produced leaves 2–several.
 2. Flowers with distinct style crests 2–3 cm long and clearly extending beyond the stigmas, and either erect or incurved.
 3. Anthers 2–3 mm long; tepals spreading from the base or the claw appressed to the filament column and the limb outspread; filaments free in the upper 1–2 mm.
 4. Outer inflorescence spathe entirely sheathing; tepals spreading from the base ..
 - 1. *H. schlechteri*
 - 4'. Outer inflorescence spathe free in the upper part and curving outward; tepal base (claw) appressed to the filament column for ca. 2 mm 2. *H. ramosissima*
 - 3'. Anthers 9–10 mm long; tepals erect in the lower half, forming a cup around the style and stamens; filaments entirely united 8. *H. cedarmontana*
 - 2'. Flowers without distinct style crests (and the style branches often not markedly flattened).
 5. Filament column \pm cylindrical; anthers erect or divergent.
 6. Plants to 30 cm tall; tepals 15–24 mm long; anthers 2–3.5 mm long, erect.
 7. Ovary ca. 4 mm long; filament column 6 mm 26. *H. fenestrata*
 - 7'. Ovary 10–12 mm long; filament column 7–9 mm 27. *H. tricolor*
 - 6'. Plants 35–75 cm tall; tepals 30–40 mm long; anthers 4.5–8 mm long, diverging from the base 9. *H. ochroleuca*
 - 5'. Filament column with a bulbous base; anthers \pm erect and contiguous, usually concealing the style branches.
 8. Tepals reflexed at maturity; flowers pendulous or secund 24. *H. pendula*
 - 8'. Tepals outspread or slightly cupped; flowers upright.
 9. Leaves to 4 mm wide, channeled below, flat above, spirally coiled in the upper part 25. *H. spiralis*
 - 9'. Leaves 5–10 mm wide, not coiled, channeled throughout 23. *H. miniata*
- 1'. Produced leaf solitary (lowermost bract-leaf occasionally with free apex and \pm leaflike).
 10. Filaments free in the upper (0.5–)1–2 mm; anthers always diverging somewhat; style branches flattened, usually with distinct stigma lobe and style crests.
 11. Leaf 2–4 mm wide and inserted well above ground level; stem flexed above the leaf sheath; anthers 3–4 mm long 21. *H. flavescens*
 - 11'. Leaf more than 5 mm wide, often over 20 mm, inserted \pm at ground level, and often sheathing the lower half of the stem; stem not flexed above the leaf sheath; anthers (4–)6–10 mm long.
 12. Ovary 10–15 mm long; lower part of tepals erect, 3–6 mm long, appressed to the lower half of the filament column.
 13. Outer tepals 18–25 mm long, 5–9 mm wide; anthers 4–6 mm long
 - 6. *H. pallida*
 - 13'. Outer tepals 29–43 mm long, 14–18 mm wide; anthers 6–10 mm long ..
 - 4. *H. cookii*
 - 12'. Ovary (15–)18–24 mm long; lower part of tepals erect, 8–9 mm long, forming a narrow cup enclosing the filament column and part of anthers
 - 7. *H. britteniae*

- 10'. Filaments united entirely; anthers diverging or parallel and contiguous; style branches flattened or not, the stigma lobe distinct with crests developed or the stigma and crests obscure.
14. Anthers 2–3(–3.5) mm long; style branches 1–2 mm long.
15. Leaf basal, sometimes sheathing the lower half of the stem; stem not flexed or bent above the leaf sheath.
16. Leaf 4–7 mm wide; ovary 10–12 mm long; plants 10–30 cm tall
----- 27. *H. tricolor*
- 16'. Leaf 10–20 mm wide; ovary 6–9 mm long; plants 20–75 cm tall.
17. Lower part of tepals (claw) ca. 2 mm, appressed to the filament column; filament column bulbous below ----- 28. *H. bifida*
- 17'. Lower part of tepals (claw) ca. 8 mm long, forming a narrow tube enclosing the filaments and anthers; filament column widened below, not bulbous ----- 29. *H. odorata*
- 15'. Leaf inserted well above ground; stem flexed above the leaf sheath.
18. Tepals 16–28 mm long; filament column 5–8 mm long; spathes 3–5 cm long.
19. Tepals 16–22 mm; filament column 6–8 mm long.
20. Tepals pink salmon ----- 31. *H. brachygyne*
- 20'. Tepals yellow ----- 30. *H. fuscomontana*
- 19'. Tepals 25–28 mm; filament column 5–6 mm long -----
----- 3. *H. bolusiae*
- 18'. Tepals 10–12 mm long; filament column 5–6 mm; spathes 2–4 cm long
----- 22. *H. tenuis*
- 14'. Anthers (3–)4–13 mm long; style branches 3–10 mm long.
21. Anthers 8–13 mm long; style branches flattened, with distinct crests.
22. Tepal claws 4–5 mm long, erect and clasping the filament column.
23. Anthers usually exceeding the stigma lobes; ovary usually partly included, not flexed at the apex of the pedicel and the flower upright ----- 4. *H. cookii*
- 23'. Anthers usually only reaching the base of the stigmas; ovary exserted, flexed at the apex of the pedicel and the flower secund -----
----- 5. *H. marlothii*
- 22'. Tepal claws ca. 14 mm long, spreading from the base and forming a wide cup or ill-defined and not cupped.
24. Leaf inserted well above ground; ovary partly to entirely exserted; inner spathe not elongating in fruit and capsules fully exserted from the spathes ----- 13. *H. flaccida*
- 24'. Leaf inserted at or shortly above ground level; ovary usually entirely included; inner spathe elongating in fruit, enclosing and always exceeding the capsules.
25. Tepals obpandurate-spatulate, widest in the upper third; filaments 7–8 mm long; anthers 8–13 mm usually not reaching the top of the style branches; ovary 18 mm long ----- 11. *H. comptonii*
- 25'. Tepals oblong-lanceolate, widest in the middle or lower third; filaments 5–6 mm long; anthers 8–10 mm, usually exceeding the style branches; ovary 12–14 mm ----- 12. *H. elegans*
- 21'. Anthers 3–7 mm long; style branches either flattened with or without crests, or style virtually unbranched.
26. Leaf ± basal and stem not flexed above the leaf sheath.
27. Anthers 4.5–7 mm; tepal claws 9–11 mm long, forming a cup around the filaments.
28. Leaf apex not thickened or prominent; stem often bulbilliferous; blooming August–November ----- 10. *H. bulbillifera*
- 28'. Leaf with prominent, thickened flat apical portion; stem never bulbilliferous; blooming April–June ----- 14. *H. autumnalis*
- 27'. Anthers 6–10 mm; tepal claws 4–6 mm long, clasping the filament column, stems never bulbilliferous ----- 4. *H. cookii*
- 26'. Leaf inserted above ground and stem flexed or bent above the leaf sheath.
29. Style dividing at or shortly above the apex of the filament column (below midline of anthers); style branches diverging when flower fully open or ± erect.

30. Filament column (6-)7-10 mm long; style branches diverging widely (sometimes forced together after anthesis by the incurving anthers when the anthers exceed the style branches) or ascending and \pm contiguous.
31. Ovary (12-) 13-19 mm long; capsule 20-40 mm long.
32. Filament column glabrous; style crests short and obtuse or evidently lacking 9. *H. ochroleuca*
- 32'. Filament column minutely papillate-puberulous; style crests triangular, 1-2 mm long
..... 16. *H. collina*
- 31'. Ovary 8-12 mm long; capsule less than 20 mm long.
33. Style branches diverging, 3-6 mm long with short acute crests; style dividing at the anther base.
34. Outer tepals 23-35 mm long; anthers 4.5-6 mm long; capsule 17-20 mm long, included or exerted from the spathes
..... 10. *H. bulbifera*
- 34'. Outer tepals 25-27 mm long; anthers ca. 4 mm long; capsule 12-15 mm long, included in the spathes 19. *H. patens*
- 33'. Style branches erect (to slightly diverging, ca. 25 mm long, without crests; style dividing between the base and middle of the anthers
..... 20. *H. vallisbelli*
- 30'. Filament column 4-5(-6) mm long; style branches ascending, \pm parallel or slightly diverging, but anthers \pm contiguous.
35. Tepal claws 2-6 mm long, forming a wide to narrow cup including part or all of the filaments only, the anthers well exerted.
36. Outer tepals 10-12 mm long, the claw 2-4 mm; anthers ca. 2 mm long 22. *H. tenuis*
- 36'. Outer tepals 16-24 mm long, the claw 5-6 mm; anthers 3-4 mm long 21. *H. flavescens*
- 35'. Tepal claws 9-15 mm long forming a narrow tubular cup including the filaments and anthers.
37. Filament column 4-5 mm long; leaf fairly short, seldom over 20 cm long, usually straight, the apex swollen and acute 15. *H. galpinii*
- 37'. Filament column 6-7 mm long; leaf long, bent and trailing, seldom less than 25 cm long, the apex often dry at flowering 16. *H. collina*
- 29'. Style dividing at or above the midline of the anthers, sometimes not divided; style branches erect.
38. Ovary usually partly or entirely enclosed in the spathes, the capsules often enclosed; style branches well developed, 2-3 mm long barely reaching or shorter than the apex of the anthers 17. *H. minor*
- 38'. Ovary usually exerted from the spathes, the capsules exerted; style branches very short, 1-2 mm long or not developed 18. *H. longistyla*

1. *Homeria schlechteri* L. Bolus, Fl. Pl. South Africa 8: sub *tab.* 306. 1928. TYPE: South Africa, Cape, Concordia, *Schlechter 11329* (BOL, lectotype; B, E, G, GRA, K, LD, MO, P, PH, PRE, S, US, Z, isolectotypes). South Africa, Okiep, *Pillans 4953* (BOL, syntype).—FIG. 4.

Plants medium to large, 15-30 cm tall. *Corms* to 3 cm in diameter. *Leaves* 3 to several, the lowermost \pm basal or inserted shortly above ground, channeled,



FIGURE 4. Morphology and distribution of *Homeria schlechteri*. Habit $\times 0.5$; flower and outer tepal $\times 1$; ovary, stamens and style branches $\times 3$.

8–20 mm wide, the margins straight or slightly undulate, to 35 cm long. *Stem* flexuose, branching from the upper nodes, the main branches also branched, the leaves on the upper nodes often bractlike and 2–5 cm long, with dry apices. *Spathes* 4–6 cm long, the outer one to $\frac{2}{3}$ the inner, entirely sheathing, the apices, dry. *Flowers* pale yellow, darker yellow in the center, often edged with grey or green, the tepals spreading from the base, usually twisted through 90° ; *outer*

tepals 18–28 mm long, 9–10 mm wide, narrowly obovate, or pandurate, the claw ca. 1 mm long, not clearly distinguished; inner tepals slightly smaller. *Filaments* 4–5 mm long, free in the upper 1–0.5 mm and diverging, the column slender, smooth; *anthers* arched, ca. 2 mm long. *Ovary* 7–10 mm long; *style* branching at the apex of the filament column; *branches* diverging, ca. 2 mm long, flattened, the stigma upright, appressed to the crests, and stigmatic on the lateral, inner surface; crests erect to horizontal, ca. 2 mm long. *Capsule* oblong, 10–13 mm long; *seeds* angular. *Chromosome number* $2n = 12$.

Flowering time: August–September.

Distribution: Namaqualand, from Bitterfontein in the south, to the Springbok area in the north; in flat sandy places; Fig. 4.

Homeria schlechteri is a fairly common species in the Springbok-Okiep copper mining area in northern Namaqualand. Elsewhere it is less frequent. It occurs as far south as the Bitterfontein-Nuwerus area and in the southern part of its range plants are often very slender, with narrow leaves, and few branches, but similar forms have also been recorded near Grootvlei (*Lewis 5740*) and northeast of Springbok (*Maguire 345*). The slender form does not seem to be a geographic race, but it may be an ecotype adapted to peculiar local conditions. Both the typical and slender forms have identical flowers, and there would seem to be no merit in giving taxonomic recognition to the variant. The flowers of *H. schlechteri* last one day, opening early in the morning and fading by 1:00 P.M.

This species is unusual in *Homeria* in having tepals extending outward from the very base, with virtually no distinction between claw and limb. *H. bolusiae*, a local species of the Van Rhynsdorp-Clanwilliam area, shares this flower type, but can easily be recognized by its single leaf and flexed stem. Apart from *H. bolusiae* the only close relative of *H. schlechteri* is *H. ramosissima* which occurs in southern Namaqualand in the Knersvlakte. *Homeria ramosissima* is distinctive in its growth form. The branching pattern produces a rounded inflorescence, and the flowers have a distinct, though short, claw to the tepals which clasp the base of the filament column. *Homeria ramosissima* also has the distal part of the outer inflorescence spathe free and curved outward, a feature which makes it easy to distinguish it from *H. schlechteri* which has entirely sheathing spathes.

SOUTH AFRICA. CAPE: 29.17 (Springbok): Klipfontein (BA), *Wikner s.n.* (SAM-62792-3). Steinkopf, *Salter 3754* (BOL, K). 20 km NE of Springbok (BD), *Barker 6763* (BOL, M, NBG). Okiep (DB), *Pillans 4953* (BOL); *Lewis 5683* (K, NBG); *Dummer s.n.* (K). Hills at Concordia, *Schlechter 11329* (B, BOL, E, G, GRA, K, LD, MO, P, PH, PRE, S, US, Z). 10 mi NE of Springbok, *Lewis 4421* (PRE, SAM). 8 km NE of Springbok, *Barker 8378* (NBG). Near Concordia, *L. Bolus 1383/29* (BOL). Fields at Rooiwinkel, near Okiep, *Goldblatt 2393* (MO).

29.18 (Gamoep): 20 mi NE of Springbok (CA), *Maguire 345* (NBG). 13 km E of Springbok, *Goldblatt 4253* (MO).

30.17 (Hondeklipbaai): Slope near Grootvlei (BB), *Lewis 5470* (BOL).

30.18 (Kamiesberg): 29 km S of Platbakkies, on Kliprand road (BC), *Goldblatt 4054* (K, MO, PRE). 3 km N of Garies (CA), *Goldblatt 3981* (BR, C, MO, PRE, S, WAG). 7 km S of Kliprand (DA), *Hugo 492* (MO, STE).

31.18 (Van Rhynsdorp): Between Bitterfontein and Nuwerus (A), *Lewis s.n.* (BOL).

2. *Homeria ramosissima* Schltr., Bot. Jahrb. Syst. 22: 95. 1900. TYPE: South Africa, Cape, Van Rhynsdorp Div., banks of the Zout R., *Schlechter 8128* (B, lectotype; E, G, GRA, K, MO, P, PRE, US, Z, isolectotypes).—FIG. 5.

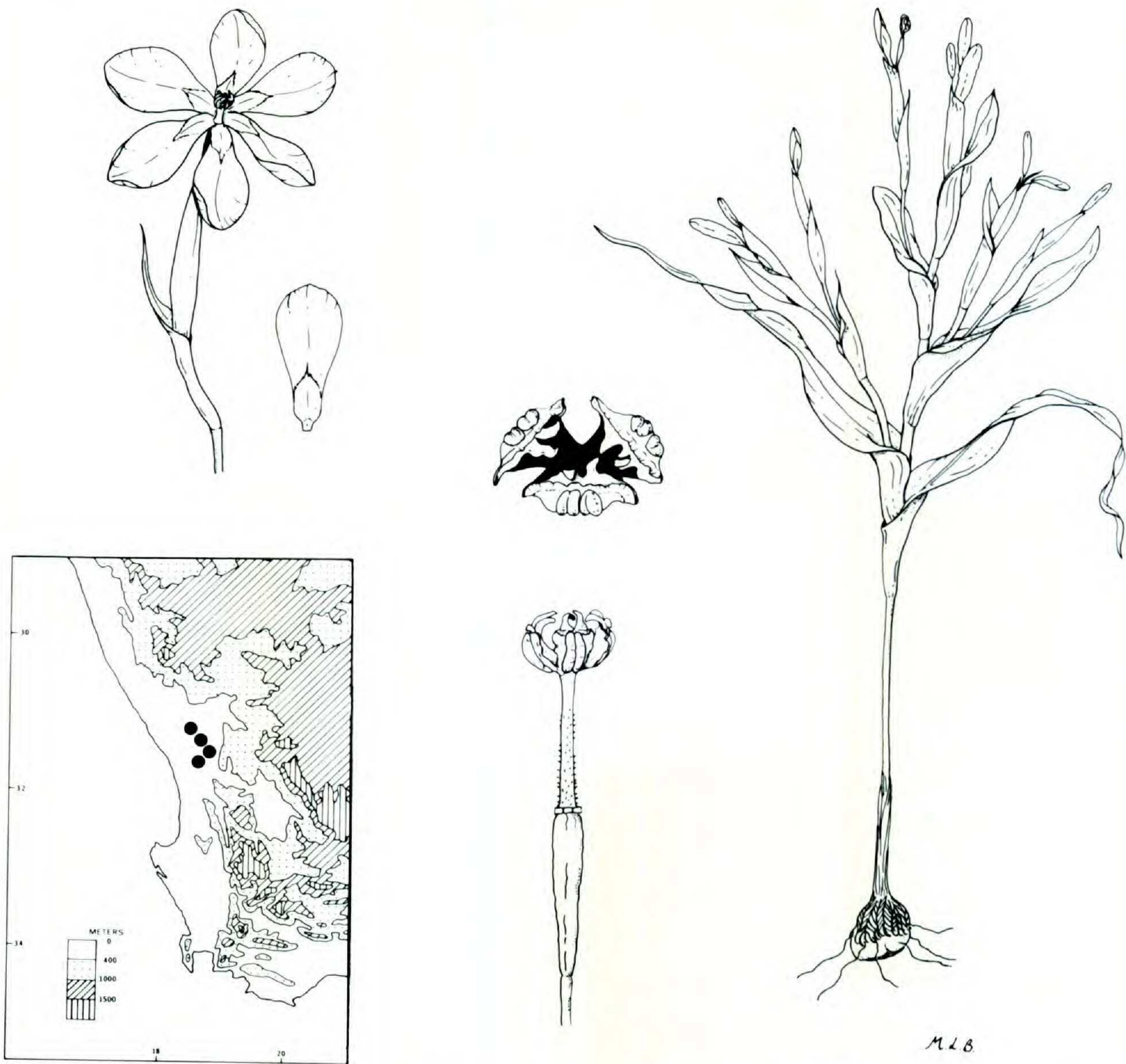


FIGURE 5. Morphology and distribution of *Homeria ramosissima*. Habit $\times 0.5$; flower and outer tepal $\times 1$; ovary, stamens and style branches $\times 3$, the top view much enlarged.

Plants small to medium, 8–20 cm tall. *Corms* 1–2 cm in diameter. *Leaves* several, the lowermost inserted above ground, channeled, somewhat twisted, to 18 mm wide, to 15 cm long, the margins undulate, leaves produced at all nodes. *Stem* erect up to the lower leaf, then flexed above each node, much branched, the branches also branching to form a round head. *Spathes* 3.5–5 cm long, the outer sheathing below with the upper half free and curved outward. *Flowers* pale yellow, with dark yellow in the center, outlined in dark green, the lower part of the tepals held against the filament column for 2 mm, the upper part outspread to slightly reflexed and twisting through 90° ; *outer tepals* 17–19 mm long, the claw ca. 2 mm long, the limb narrowly obovate, to 8 mm wide; inner tepals slightly smaller. *Filaments* 6–7 mm long, free in the upper 1 mm and diverging, the column cylindrical, minutely papillate in the lower 2 mm; *anthers* 2–3 mm long, arched. *Ovary* 7–9 mm long; *style* dividing at the apex of the filament column; *branches* flattened, ca. 2 mm long, diverging, the stigma erect, appressed to the base of the crests, receptive on the inner lateral surface; crests ca. 1.5 mm

long, erect, extending above the anthers. *Capsule* ripening while plant still in bloom, oblong-clavate 10-15 mm long. *Chromosome number* $2n = 12$.

Flowering time: late July–early September.

Distribution: Knersvlakte, between Van Rhynsdorp and Nuwerus; Fig. 5.

Homeria ramosissima, with its typical rounded inflorescence is a distinctive plant of the Knersvlakte, the area between Nuwerus and Van Rhynsdorp so rich in succulent plants. It typically has slightly twisted leaves with undulate margins, and outer inflorescence spathes in which the upper part is free and curves outward. Flowers of *H. ramosissima* last a single day, opening early in the morning, and fading by 1:00 P.M. The species is distinctive in its general form, and very unusual for *Homeria* in that every stem axil bears a produced leaf, whereas in other species the upper axils have reduced sheathing bractlike leaves. *Homeria ramosissima* is closely related to *H. schlechteri* but is easily recognized by its overall habit, undulate leaves, absence of stem bracts, inflorescence spathes with apices not sheathing, and clawed tepals clasping the base of the filament column.

SOUTH AFRICA. CAPE: 31.18 (Van Rhynsdorp): Ca. 4 km S of Nuwerus (AB), *Lewis 1632* (SAM). Knersvlakte (B), *Bond 1511* (NBG); *Barker 1313* (NBG); *Compton 20731* (NBG); *Lewis 5532* (NBG); *Esterhuysen 5380* (BOL), *5980* (BOL, K). 33 km N of Van Rhynsdorp (BC), *Goldblatt 3984* (BR, MO, PRE). Zout R., Frames koppie, *L. Bolus s.n.* (BOL-19086). Zout R., *Schlechter 8128* (B, E, G, GRA, K, MO, P, PRE, US, Z). At turnoff to Groot Graafwater, Knersvlakte, *Goldblatt 2550* (MO).

3. *Homeria bolusiae* Goldbl., sp. nov. TYPE: South Africa, Cape, sandstone outcropping near Bulshoek, Olifants R. valley, *Goldblatt 5660* (MO, holotype; K, NBG, PRE, S, WAG, isotypes).—FIG. 6.

Planta 15–40 cm alta. Cormus ca. 10 mm in diametro. Folium unicum, supra terram insertum, 2–4 mm latum. Caulis flexus supra insertionem folii, simplex vel pauciramosa. Spathae 4–5 cm longae, exterior longitudine dimidia ad $\frac{1}{3}$ interioris. Flores flavi, unguis brevis, erectis; tepala exteriora ca. 28 mm longa, unguis ca. 1 mm, interiora ad 20 mm longa. Filamenta 5–6 mm longa, connata; antherae 4–5 mm longae divergentes, arcuatae. Ovarium 7–8 mm longum, rami styli lati, ca. 2.5 mm longi, cristae ca. 1 mm longae.

Plants slender, 15–40 cm tall. *Corm* ca. 1 cm in diameter. *Leaf* solitary, inserted well above ground, canaliculate, 2–4 mm wide, longer than the stem, often broken and trailing above. *Stem* erect, flexed above the leaf insertion, usually with a few short branches, the stem bracts 2–4 cm long. *Spathes* 4–5 cm long, the outer $\frac{1}{3}$ – $\frac{1}{2}$ the inner. *Flowers* pale yellow, the tepal claws short, erect, held against the lower part of the filament column, the limbs extended; *outer tepals* ca. 28 mm long, the claw 1–2 mm long, the limb pandurate-obovoid, to 12 mm wide; inner tepals to 20 mm long, 8 mm wide. *Filaments* 5–6 mm long, united, the column slender; *anthers* 4–5 mm long, diverging and arcuate, exceeding the stigmas. *Ovary* 7–8 mm long; *style* dividing at the anther base; *branches* broad, flattened, ca. 2.5 mm long, the stigma upright, held against the crests, receptive on the lateral inner surface; crests ca. 1 mm long. *Capsule* and seeds not known. *Chromosome number* $2n = 12$.

Flowering time: late August–September.

Distribution: Olifants River valley on the slopes of the Nardouw mountains, and north at Lokenberg; Fig. 6.

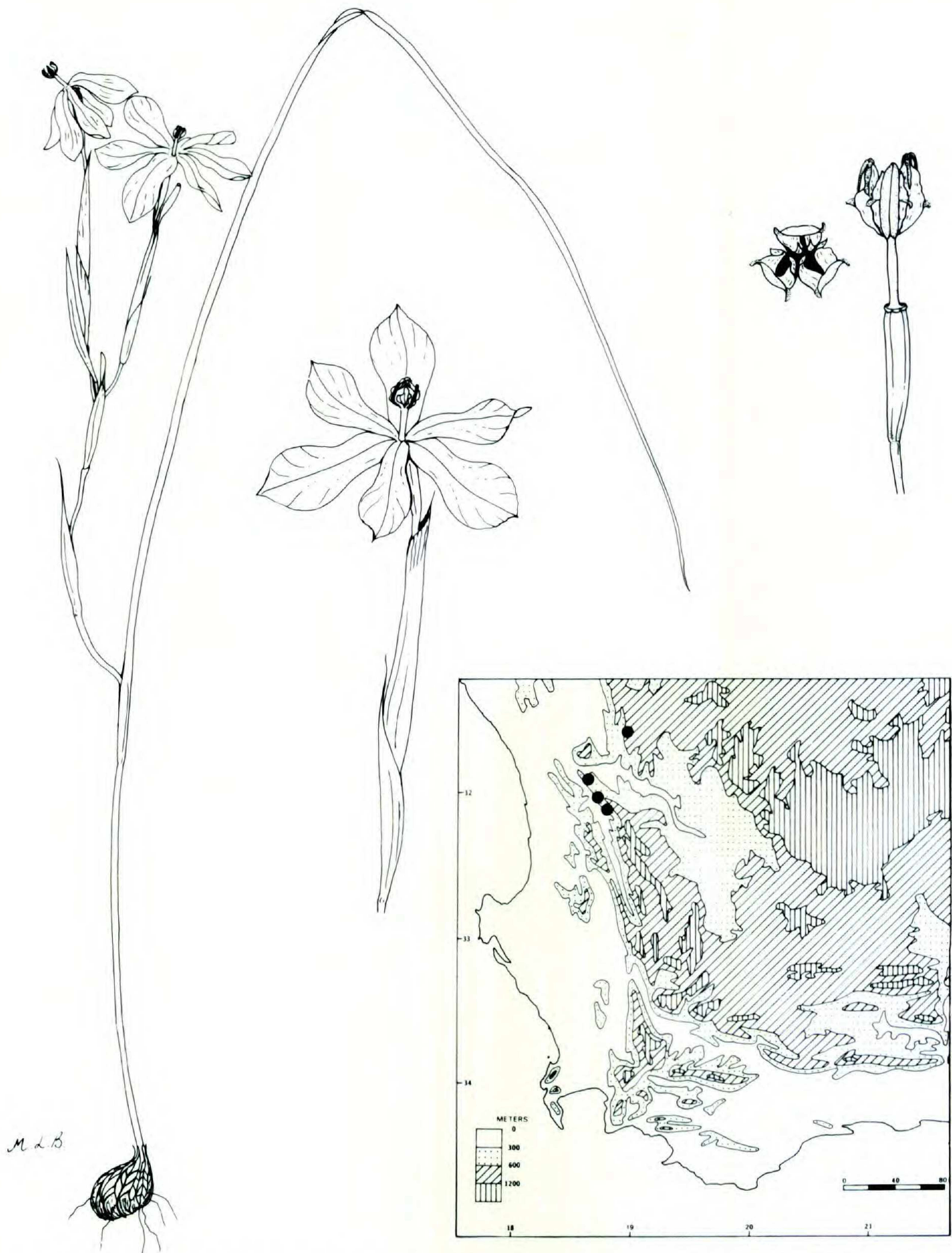


FIGURE 6. Morphology and distribution of *Homeria bolusiae*. Habit $\times 0.5$; flower $\times 1$; ovary, stamens and style branches $\times 2$.

Judging from the very few gatherings, *Homeria bolusiae* may be a rather rare species, but the area between its northern and southern stations is very inaccessible and thus poorly collected, so it may be more common than is indicated. It seems closely related to *H. schlechteri*, a Namaqualand species, and the flowers are almost identical. The flowers of *H. bolusiae* have entirely united filaments,

a filament column 5–6 mm long, and anthers 4–5 mm long, much exceeding the stigma lobe, and shortly clawed tepals. These characters, together with its single rather narrow leaf, set well above ground, and the sharp flexure of the stem above the leaf insertion make *H. bolusiae* easy to distinguish from *H. schlechteri*. Like the other two species of section *Namaquana*, the flowers of *H. bolusiae* open early in the mornings, at first light, and fade between 1 and 2 P.M.

Some confusion may also occur with *H. flavescens* (section *Homeria*) but this species has distinct, long and broad tepal claws, usually shorter filaments ca. 5 mm long, often free near the apex, and anthers usually only 3–4 mm long. Both *H. bolusiae* and *H. flavescens* are poorly known and should be studied further as collections become available.

The species is named in honor of H. M. L. Bolus who made a major contribution to the understanding of *Homeria*. She described some 20 species in the genus in the years 1920–1938, most of them still recognized, thus adding substantially to the total of 6 species admitted by Baker in the *Flora Capensis*, and the 5 more described by Schlechter in 1900.

SOUTH AFRICA. CAPE: 31.18 (Van Rhynsdorp): Nardouw road, on pass (DC), *Barker 7434* (NBG). Sandstone outcropping S of Bulshoek barrage (DD), *Goldblatt 5660* (K, MO, NBG, PRE).

31.19 (Calvinia): Lokenburg (CA), *Acocks 19722* (NBG, PRE), *17023* (K).

31.18 (Clanwilliam): Near Clanwilliam (BB), *Loubser 936* (NBG).

4. *Homeria cookii* L. Bolus, Fl. Pl. South Africa 8: *tab. 366*. 1928. TYPE: South Africa, Cape, Concordia valley, Montagu Div., *Cook s.n.* (BOL, lectotype; K, isolectotype).—FIG. 7.

H. pillansii L. Bolus, Fl. Pl. South Africa 18: *tab. 684*. 1938. TYPE: S. Africa, Cape, Gydo Pass, *Pillans s.n.* (BOL-19882, holotype; K, PRE, isotypes).

Plants medium to large, (20–)30–60 cm tall. *Corms* 15–30 mm in diameter. *Leaf* solitary, basal, sheathing the lower part of the stem, falcate to trailing above, channeled, (6–)12–25 mm wide, longer than the stem. *Stem* erect, occasionally branching near the base, always from the upper two nodes, the stem bracts usually large (4–)6–9 cm long, the branches short, straight, but flexed below the spathe. *Spathes* (4–)5–9 cm long, the outer slightly shorter than to two-thirds the inner, the inner elongating later to enclose young fruits. *Flowers* pale yellow, occasionally pale salmon, darker towards the center with tiny dark yellow to green spots, faintly scented, the base of the tepals erect, 4–6 mm long, pressed to the filament column, outspread in the upper part, horizontal to slightly reflexed, and often twisted; *outer tepals* 30–43 mm long, the claw 4–6 mm long, triangular, the limb 14–18 mm wide, oblong to slightly obovate; *inner tepals* 30–35 mm long, 12–14 mm wide. *Filaments* 6–10 mm long, rarely entirely united, usually free in the upper 1–2 mm, the column cylindrical, smooth or sparsely papillate-pubescent in the lower third; *anthers* 6–10 mm long, diverging, the tips curving together. *Ovary* 10–15 mm long, usually included in the spathes; *style* branching at the apex of the filament column; *branches* broad, diverging, 5–7 mm long, curving upwards; the stigma broad, bilobed, stigmatic laterally; *crests* 2–4 mm long, horizontal. *Capsule* 15–22 mm long, cylindrical to clavate. *Chromosome number* $2n = 12, 24, 36$.

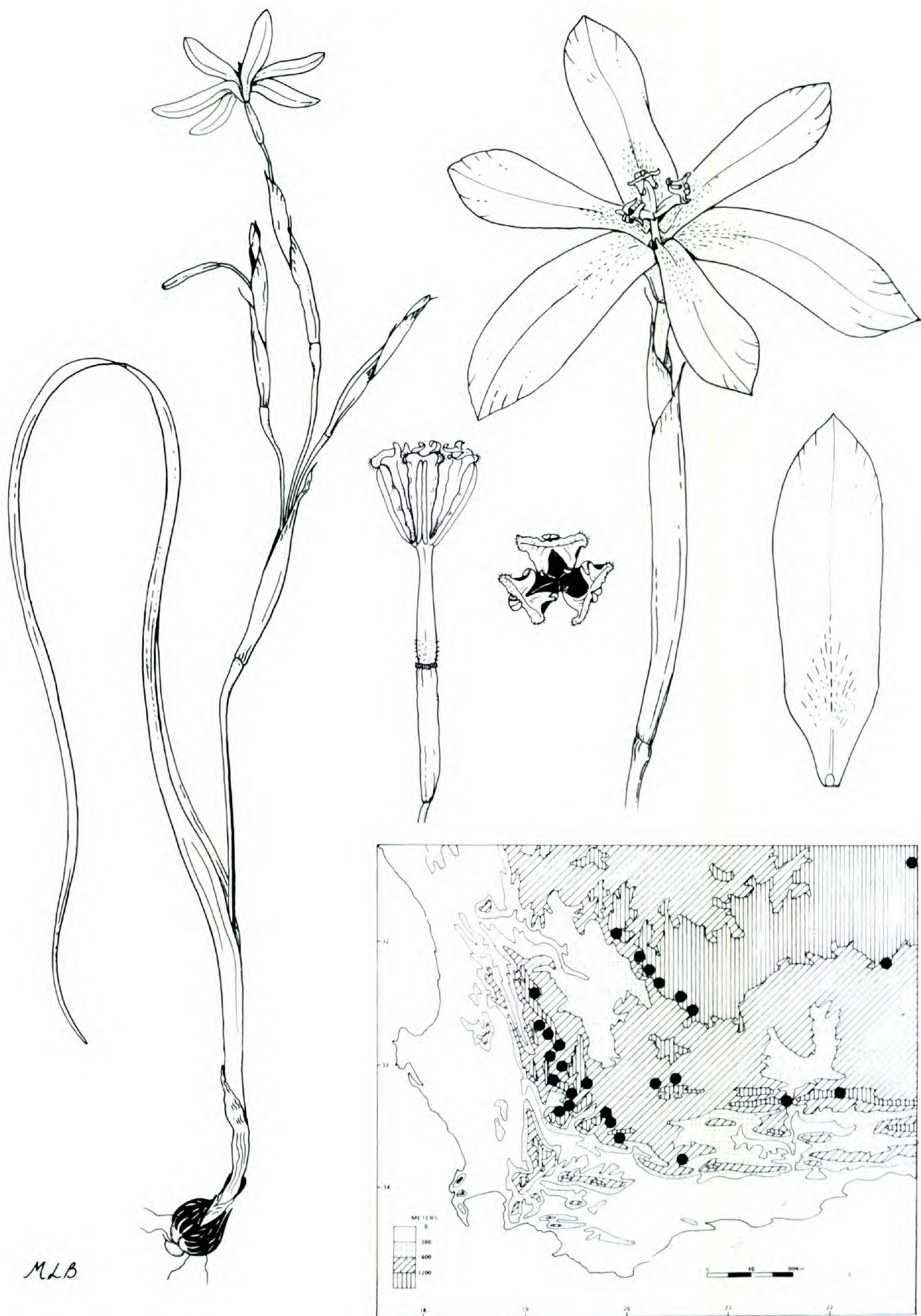


FIGURE 7. Morphology and western part of the range of *Homeria cookii*. Habit $\times 0.5$; flower and outer tepal $\times 1$; ovary, stamens and style branches $\times 2$, the top view much enlarged. The complete range of *H. cookii* is shown in Fig. 9.

Flowering time: late August–October.

Distribution: widespread, mainly at high altitudes, from the Cedarberg in the west, across the Roggeveld mountains and the Swartberg, extending in the east through the karoo at higher elevations to Queenstown, and north in the mountains of the eastern Orange Free State and western Lesotho; Figs. 7, 9.

As circumscribed here, *Homeria cookii* is a very widespread and rather variable species. It extends from the mountains of the western Cape, a winter rainfall area, across the upper karoo to Lesotho, where summer rainfall prevails, but where there is always a certain amount of winter precipitation. *Homeria cookii* thus has a rather unusual distribution, though it is consistent in its occurrence at high altitudes and in its spring blooming. Plants from the western part of its range are usually taller and more robust, and characteristically have the outer inflorescence spathes considerably shorter than the inner. Typically, the western forms have entirely united filaments. The karoo and eastern mountain forms are usually shorter, occasionally quite slender, have narrower leaves, shorter spathes, and always have the filaments free in the upper 1–2 mm. Flower form is fairly constant throughout the range of the species.

Chromosome number is also variable (Goldblatt, 1980a). The two western Cape populations studied are hexaploid, $2n = 36$. A population in the Roggeveld near Sutherland is diploid, $2n = 12$, and the three karoo and eastern populations examined, from Victoria West, Britstown and Sterkstroom are tetraploid, $2n = 24$.

Homeria cookii is related on the one hand to the rather local, western karoo species, *H. marlothii*, and on the other, to the widespread highveld species *H. pallida*. *Homeria marlothii* has a very broad, basal and sheathing leaf, a much-branched stem and occurs in the northern Roggeveld from Middelpoort to the Hantam Mountains around Calvinia, always in heavy clay soils. *Homeria cookii* can be distinguished from *H. marlothii* in a general way by a narrower leaf and fewer branches, but more reliably by floral differences. *Homeria cookii* has longer, and relatively narrower tepals with the inner tepals rather smaller than the outer, and flowers always upright. *Homeria marlothii* has smaller, comparatively broader tepals and a much smaller difference between the inner and outer tepals. Its flowers are often secund and always have entirely united filaments.

Relationships between *H. cookii*, especially its eastern form, and *H. pallida* are close. The eastern form is frequently included in *H. pallida*, incorrectly I believe. It is often impossible to distinguish the typical, western form of *H. cookii* from plants found to the east, but easy to recognize differences between the latter and *H. pallida*. The flowers of *H. pallida* are consistently smaller, the tepals seldom longer than 25 mm, and comparatively narrow, while the style branches and crests are shorter than in *H. cookii*, which has tepals in the range of 30–43 mm, and never narrower than 14 mm. There are cytological differences also. All the southern populations of *H. pallida* examined have $2n = 8$ and the northern populations $2n = 12$, compared with three records of tetraploidy, $2n = 24$ in eastern populations of *H. cookii*. *Homeria cookii* and *H. pallida* seem in general to have complementary distribution ranges, with little overlap. Both species have, however, been recorded in the Ficksburg area of the Orange Free State, and near Richmond in the karoo.

- LESOTHO. 28.28 (Bethlehem): Leribe (CC), *Dieterlen 187* (K, P, PRE).
 29.27 (Maseru): Thaba Tsueu (CD), *Page s.n.* (BOL-17933). Morija (DA), *Jacotet s.n.* (M, Z).
 SOUTH AFRICA. CAPE: 29.22 (Prieska): Prieska (DA) *Bryant 843* (K, PRE), *J322* (PRE).
 30.22 (Carnarvon): Near Vosburg (DB), *Hafström & Acocks 305* (PRE, S).
 30.23 (Britstown): 5 km W of Britstown (DA), *Goldblatt 4680* (MO).
 30.25 (Colesberg): Colesberg (CA), *Sidey 1668* (MO, S). Van Schalkwykskraal, Venterstad distr. (D), *Thorne s.n.* (BOL-51962).
 31.20 (Williston): Near Blomfontein, W of Middelpoos on Calvinia road (CC), *Goldblatt 4273* (MO).
 31.23 (Victoria West): Victoria West (AC) *Goldblatt 4681* (MO).
 31.24 (Hanover): Naauwpoort (BB), *L. Bolus s.n.* (BOL-14467). Vlakplaas, Richmond, *H. Bolus 13834* (BOL, K), *13897* (BOL).
 31.26 (Queenstown): Jamestown (BB), *Barker s.n.* (BOL). Komani R., Queenstown (D), *Galpin 12220* (BOL, K).
 32.19 (Wuppertal): Top of Cedarberg Pass (AC), *Goldblatt 4055* (BR, MO, PRE, S, WAG). Top Uitkyk Pass, Cedarberg, *Gillett 4110* (BOL, K, NBG, PRE). Elandskloof (CA), *Martin s.n.* (NBG). Cold Bokkeveld, 45 km E of Citrusdal (CD), *Goldblatt 192* (BOL). Bokkeveld Tafelberg, *Leighton s.n.* (BOL-21506, GRA, PRE). De Keur, *Barker 3108* (NBG).
 32.20 (Sutherland): Sutherland road 57 km from Middelpoos (AB), *Arnold 937* (PRE). Roggeveld escarpment between Kromberg and Uitkyk (AC), *Thompson 1570* (PRE, STE). Top of Verlaten Kloof (DA) *Marloth 9641* (PRE).
 32.22 (Beaufort West): Beaufort West (BC) *Taylor 914* (BOL, K).
 32.24 (Graaff Reinet): Graaff Reinet (CA), *H. Bolus 42* (K, S).
 32.26 (Fort Beaufort): Whittlesea (BB), *Sim s.n.* (BOL).
 33.19 (Worcester): Gydo (AB), *Pillans s.n.* (BOL-19882, K, PRE). *Leipoldt 3017* (BOL, K, PRE), *Leipoldt s.n.* (K). Elandsfontein, 6 mi N of Gydo Pass, *Lewis 2674* (SAM). Groenfontein, Cold Bokkeveld, *Barker 3046* (NBG). Karoopoort (BA), *Barker 1317* (NBG). Near Theronsberg Pass (BC), *Dymond s.n.* (BOL-21235, SAM). Triangle, *Compton 3907* (BOL, NBG). Lakenvlei, *Barker 1318* (NBG). E slopes of Swarmoed Pass, *Goldblatt 4410* (MO). Matroosberg Station-national road, *Goldblatt 4178* (MO). 12 mi S of Matroosberg, Koo road (DB), *Loubser 2059* (NBG).
 33.20 (Montagu): Tweedside (AB), *Lewis s.n.* (BOL). Op-de-Tradouw, W of Barrydale (DC), *Goldblatt 4186* (MO, WAG).
 33.21 (Ladismith): Seven Weeks Poort (AD), *Phillips 1529* (SAM); *Lewis s.n.* (BOL-31588).
 33.22 (Oudtshoorn): Swartberg Mts., on Die Hell road (AC), *Goldblatt 2938* (K, NBG, MO, PRE).
 33.23 (Willowmore): Avontuur (CA), *Gillett 1583* (STE). Avontuur, near station, *Fourcade 4268* (BOL, STE).
 33.25 (Port Elizabeth): Longmore Forest Station (CC), *Long 1041* (GRA, K, PRE).
 Precise locality unknown: Elandshoek, Aliwal N., *F. Bolus 129* (BOL). Concordia valley, Montagu, *Cook s.n.* (BOL, K). Klein Roggeveld, *Marloth 9590* (PRE).

5. *Homeria marlothii* L. Bolus, S. African Gard. 19: 320. 1929. TYPE: South Africa, Cape, Hantam Mts., *Marloth 12787* (BOL, lectotype; K, PRE, isolecotypes).—FIG. 8.

Plants large, 50–75 cm tall. *Corms* large, ca. 35 mm in diameter. *Leaf* solitary, basal, sheathing the lower part of the stem, channeled, 15–35 mm wide, falcate to trailing. *Stem* straight, much branched from the upper nodes, the branches erect, flexed below the spathes, the stem bracts 8–12 cm long. *Spathes* 5–7 cm long, the apices attenuate, dark brown, the outer spathe slightly shorter than the inner. *Flowers* often secund, pale yellow or pink with a nectar guide of dark color near the center, covered with tiny green dots, the lower part of the tepals erect and appressed to the filament column, the upper part spreading horizontally; *outer tepals* 27–34 mm long, the claw to 4 mm long, erect, the limb spreading, 11–17 mm wide, oval; inner tepals slightly smaller, obovate, tapering towards the base. *Filaments* united, the column 7–10 mm long, pubescent in the lower half, cylindrical or slightly bulbous in the lower half; *anthers* 8–11 mm long, diverging,

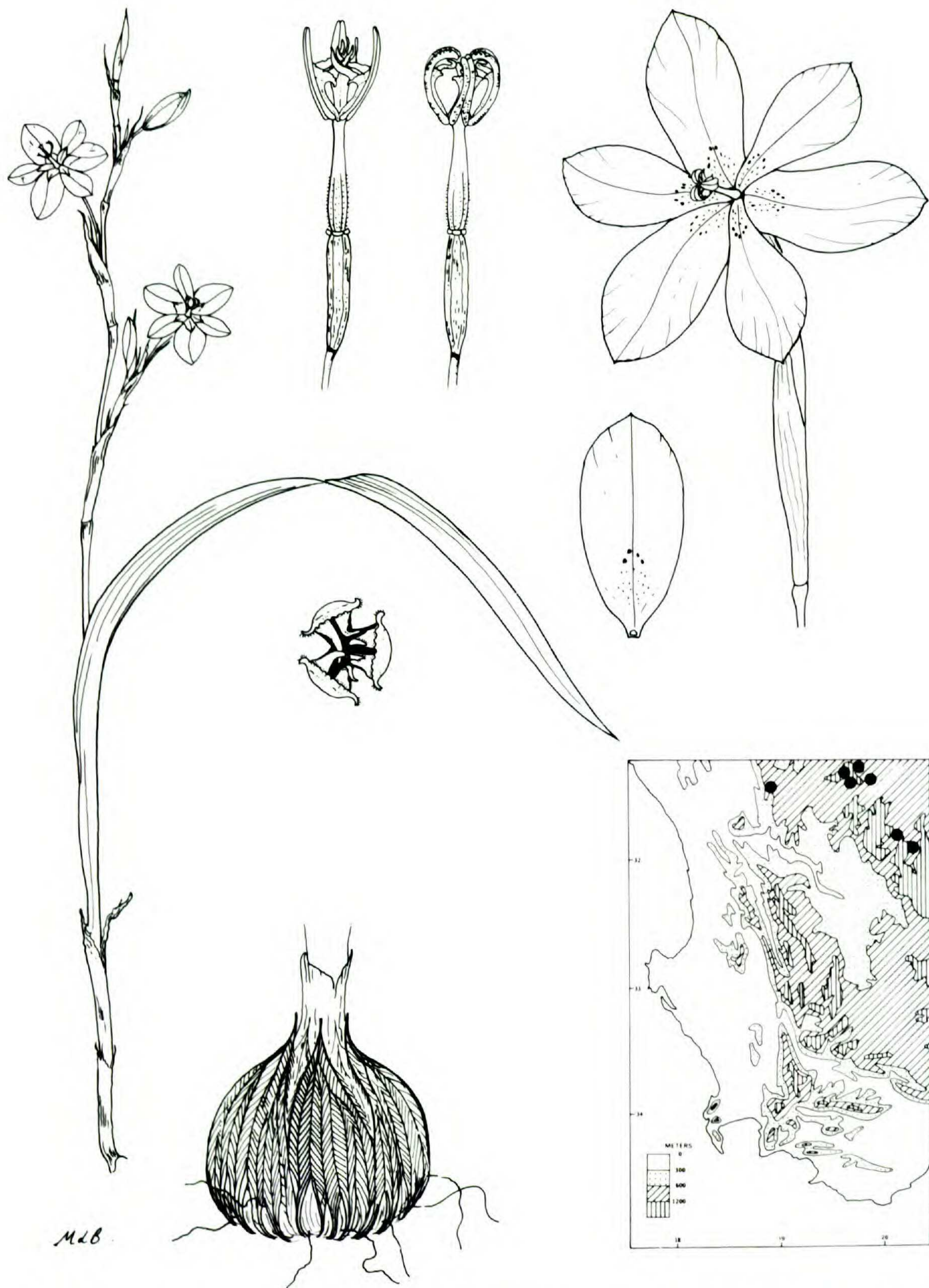


FIGURE 8. Morphology and distribution of *Homeria marlothii*. Habit $\times 0.5$; flower, outer tepal and corm ca. $\times 1$; ovary, stamens and style branches (before and after anthesis) $\times 1.5$, the top view much enlarged.

arched with the apices curved toward the center. *Ovary* 10–20 mm long; *style* branching at the anther base; *branches* diverging, 4–10 mm long, the stigma lobe broad, fertile laterally; *crests* horizontal, 3 mm long. *Capsule* 2–2.5 cm long, clavate-cylindrical; seeds angled. *Chromosome number* $2n = 24$.

Flowering time: late July–early October.

Distribution: upper Roggeveld between Middelpoos and the Hantam mountains, north of Calvinia, and extending east to Nieuwoudtville; usually in rocky sites, in heavy red clay; Fig. 8.

Homeria marlothii is one of the tallest, most robust species of the genus. It has a relatively restricted range in the northwestern Cape in the northern Roggeveld and in the Hantam Mountains. Its closest relative is probably *H. cookii*, a widespread species that occurs to the south in the Roggeveld extending eastwards as far as Lesotho. The two are sometimes difficult to distinguish as they are very similar in habit, though *H. marlothii* has smaller and usually secund flowers. Its tepals range from 27–34 mm long and 11–17 mm wide, with relatively little difference between the inner and outer whorls; also, it always has completely joined filaments. Because of its size and profuse flowering, *H. marlothii* is well worth horticultural attention.

SOUTH AFRICA. CAPE: 31.19 (Calvinia): Uitkomst farm, SW of Nieuwoudtville (AC), *Barker 10737* (NBG). Tierhoek Nek (BC), *Lewis 4804* (SAM). 28 mi N of Calvinia (BD), *Johnson 574* (NBG). 22 mi N of Calvinia, *Maguire 1977* (BOL, NBG). 26 mi N of Calvinia, *Middlemost 1779* (NBG). Moordenaarspoort, N of Calvinia, *Lewis 2556* (SAM), *2557* (SAM). Klipwerf road 34 km N of Calvinia, *Goldblatt 4284* (MO, S), *4285* (K, MO, PRE). Hantamsberg, N of Calvinia, *Marloth 12787* (cult.) (BOL, K, PRE); *Lewis 2588* (SAM); *Goldblatt 681* (BOL); *Acocks 18516* (K, MO, PRE, S).

31.20 (Williston): 24 km NW of Middelpoos, near Onderplaas (CC), *Goldblatt 4263* (BR, K, MO, PRE, S). Elandsfontein, Calvinia-Middelpoos (DD), *Hutchinson 721* (BOL, GRA, K, PRE).

6. *Homeria pallida* Baker, Handb. Irid. 75. 1892. TYPE: South Africa, Cape, Moshowa R., near Old Litakun, *Burchell 2252-1* (K, lectotype). South Africa, Transvaal, *Holub. s.n.* (syntype not seen).—FIG. 9.

Moraea glauca Wood & Evans, J. Bot. 35: 352. 1897. TYPE: South Africa, Natal, Mooi River, *Wood 4035* (K, lectotype).

Homeria glauca (Wood & Evans) N. E. Brown, Trans. Roy. Soc. S. Africa 17: 350. 1929.

H. humilis N. E. Brown, Trans. Roy. Soc. S. Africa 17: 351. TYPE: South Africa, Transvaal, Pretoria district, *Mare s.n.* (K, lectotype; PRE, isolectotype).

H. mossii N. E. Brown, Trans. Roy. Soc. S. Africa 17: 351. TYPE: South Africa, Transvaal, Geduld, *Moss 15606* (K, lectotype; PRE, isolectotype).

H. pura N. E. Brown, Trans. Roy. Soc. S. Africa 17: 351. TYPE: South Africa, Orange Free State, Parys, *Young s.n. sub Moss 13494* (PRE, lectotype).

H. townsendiae N. E. Brown, Trans. Roy. Soc. S. Africa 17: 351. TYPE: South Africa, Transvaal, Ermelo, *Townsend s.n. sub Moss 15810* (K, lectotype; PRE, isolectotype).

Moraea hakosensis Dinter ex Sölch, Beitr. Fl. Sudwest-Afr., Diss. Univ. München 135. 1960, nom. nud.

Plants medium in size, but from 10–40 cm, slender to robust. *Corms* 1–2 cm in diameter, with black reticulate tunics. *Leaf* solitary, basal, often enveloping the lower part of the stem, and falcate, or erect, with the upper part often bent, and trailing, canaliculate, usually 5–15 mm wide, much longer than the stem. *Stem* erect, sometimes weakly flexed below the nodes, the branches several, straight, flexed below the spathe. *Spathes* 3.5–5(–6) cm long, the inner slightly shorter. *Flowers* yellow, occasionally pink, with dark yellow in the center and green-speckled nectar guides, the lower part of the tepals 3 mm, erect and appressed to the filament column, the upper part of the tepals spread horizontally; *outer tepals* 18–24(–27) mm long, the claw short, narrow, 3 mm long, the limb

5–8(–12) mm wide, \pm oblong, occasionally slightly wider in the upper third or near the base; inner tepals smaller, narrowly obovate, to 6 mm wide. *Filaments* partly united, 5–7 mm long, free in the upper 1.5–2 mm, and diverging, the column smooth, cylindrical; *anthers* straight, becoming arched after anthesis, 4–6 mm long, exceeding the stigmas. *Ovary* ca. 10 mm; *style* branching at the apex of the filament column; *branches* diverging, 5–6 mm long, ca. 1 mm wide, the stigma bilobed; crests ca. 1 mm long, erect or curved inward to horizontal. *Capsule* 1–2 cm long, oblong; seeds angled. *Chromosome number* $2n = 12, 8$.

Flowering time: late August–October (rarely until December).

Distribution: widespread from central Namibia (Windhoek) across the northern Cape, southeastern Botswana, throughout the Orange Free State and adjacent Karoo to the south, in the southern Transvaal as far east as Machadodorp and Lydenburg, and in the Natal midlands as far south as Lions River; Fig. 9.

There is an unusually large number of synonyms for *Homeria pallida*, although all but *H. glauca*, in fact, probably represent very little variation. Brown (1929) recognized six species of *Homeria* in the Transvaal and Natal, distinguishing them on what I consider trivial characters such as might be found in the variation pattern of single populations. Flowers of all Brown's species are essentially identical, except for very small size differences, but vegetative form does differ, either in height, number of branches, leaf width, and spathe length. With considerably more material of this small-flowered Transvaal, Natal and Orange Free State *Homeria* now available, it seems likely that there is only one species involved. The single significant variant is the eastern Transvaal-Natal Midlands-Drakensberg foothills form, called *H. glauca*, which differs consistently in having numerous cormlets borne at the corm base, in the axil of the leaf, and sometimes of the lower stem bracts. The flowers are identical with those of *H. pallida*. There seems no good reason to recognize *H. glauca*, despite its unusual cormiferous habit. It seems in all other features like *H. pallida* and evidently occupies the same ecological niche. Significantly not all the Natal collections of the species have the cormiferous characteristic (e.g., *Wright 16*, Lions River).

Homeria pallida is widespread, occurring in a belt across southern Africa in highveld grassland, and it extends from Windhoek (Namibia) in the west to Machadodorp and Lydenburg (Transvaal) in the east. It flowers in the spring, at the end of the long, usually dry winter, before the onset of the summer rainfall season. In areas of complete winter drought, in the southern Transvaal for example, it often occurs in vleis, or similar wet areas, but in the Orange Free State, which may receive some winter precipitation, it grows in open grassveld, where it is very common. *Homeria pallida* is extremely toxic to stock and is the cause of considerable debilitation and death among sheep and cattle.

Cytologically the species is unusual in being heteroploid. Three Transvaal populations examined have the common diploid number of $2n = 12$. Several other populations, all from the Orange Free State, are aneuploid with $2n = 8$, and at least the two populations examined meiotically are complex heterozygotes (Goldblatt, 1980b). The amount of chromosome material in the two cytotypes is the same. The $2n = 12$ form has solely acrocentric chromosomes, and the $2n = 8$

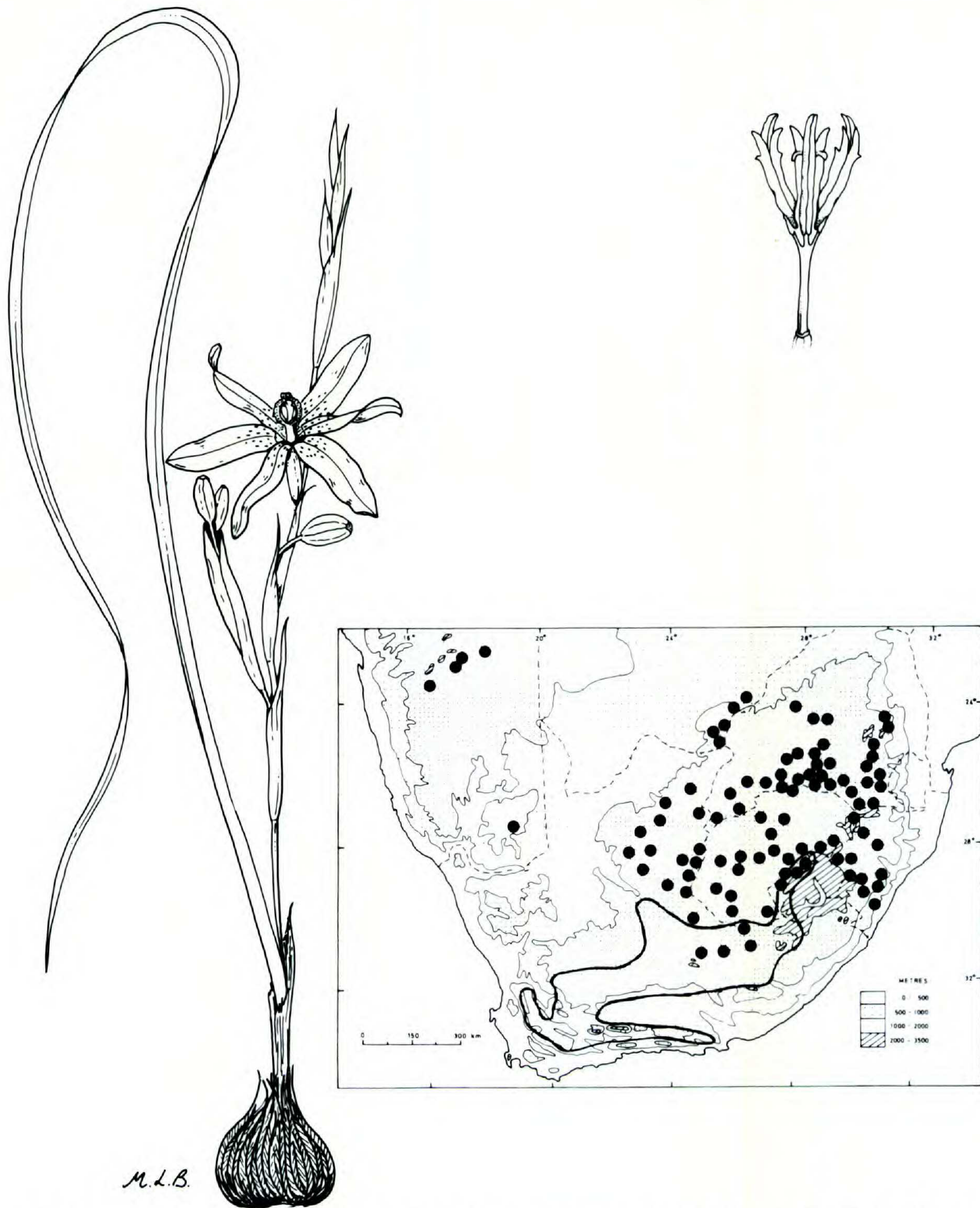


FIGURE 9. Morphology and distribution of *Homeria pallida*. Whole plant including flower ca. $\times 1$; stamens and style branches $\times 3$. Distribution of the related *H. cookii* is outlined.

form two pairs of metacentrics. There are no apparent morphological differences between the cytotypes.

Homeria pallida is related to *H. cookii*, which occurs to the south, from Lesotho, across the southern upper karoo, to the western Cape mountains. The differences between the two species are mainly of size, and the basic vegetative form and floral structure is almost identical. *Homeria pallida* can easily be distinguished by its flowers, the tepals of which are 17 to 25 mm long and up to 8

mm wide, while even the smallest forms of *H. cookii* have tepals longer than 28 mm and 14–18 mm wide.

BOTSWANA. 24.25 (Gaborone): Gaborones Dam (DB), *Lambrecht 324* (K). Content farm (DD), *Hanson 3153* (PRE).

24.26 (Mochudi): Mochudi (AC), *Rogers 6229* (Z).

25.25 (Mafeking): Lobatse-Ghansi (B), *Lambrecht 288* (PRE).

LESOTHO. 29.27 (Maseru): Maseru (AD), *Williamson 9* (K). Mamathes (BB), *Jacot Guillarmod 2157* (K, PRE). Maseru-Roma (BC), *Gillett 17484* (K, M, MO, PRE). Roma University Campus, *Schmitz 25,8365* (PRE). Morija (DA), *Gilliland s.n.* (J-24998).

NAMIBIA. 22.17 (Windhoek): Frauenstein, near Omuramba (AD), *Giess 13588* (K, M, MO, PRE). Finkenstein, Windhoek Bergland (CB), *Seydel 3640* (G, K, LD, MO, PRE, US).

22.18 (Gobabis): Omatetwa Noord farm (AA), *Homaun s.n. sub Giess 10187* (STE, PRE).

23.16 (Nauchas): Hakosgebirge (A), *Rusch 7959* (B, BOL, K, PRE, Z).

27.18 (Grünau): Grundorn am Gansberg, *Rusch 7922* (B).

SOUTH AFRICA. CAPE: 26.24 (Vryburg): Taungs (CA), *Pole-Evans s.n.* (PRE-15837). Armoedsvlakte, Vryburg (DC) *Henrici 20* (PRE).

27.22 (Olifantshoek): Sishen (DD), *Collins 77* (J).

27.23 (Kuruman): Moshawa R., near Old Litakun (BB), *Burchell 2252-1* (K). Gathlose Bantu Reserve (CD), *McDonald 77/149* (PRE).

28.23 (Griekwastad): Grootfontein (AC), *Wilman s.n.* (BOL). Danielskuil, townlands (BA), *Collins s.n.* (J-42176). W of Griquatown (CC), *Mauve 4140* (J, K, M, PRE).

28.24 (Kimberley): Paardeberg (CC), *Harris s.n.* (BOL-18757). Dronfield (DB), *Badenhorst 22* (K, PRE). Kimberley, *Swanson s.n.* (BOL); *Verdoorn 586* (PRE-35863). Wolwefontein, Barkly West (DA), *Acocks 722* (PRE).

29.22 (Prieska): Prieska (DA), *Bryant 843* (K).

29.23 (Douglas): S bank at junction of Orange and Vaal (BA), *Anderson 678* (BOL).

29.24 (Hopetown): Modder River Station (BA), *Harris s.n.* (BOL-31595, NBG).

30.24 (De Aar): Philipstown (AD), *Vahrmeijer 1374* (PRE).

31.24 (Hanover): Vlakplaats, Richmond Div. (BB), *H. Bolus s.n.* (BOL-13033, PRE).

31.25 (Steynsburg): Reeds farm, Steynsburg (BD), *Pole-Evans 1736* (PRE). Middeburg, *Theron 39* (PRE).

NATAL: 28.29 (Harrismith): Kruisfontein, Bergville dist. (CB), *Nel 2825* (PRE). Cathedral Peak Hotel (CC), *Schelpe 885* (NU).

28.30 (Dundee): Dundee and Glencoe townlands (AA), *Shirley 92* (NU).

29.29 (Underberg): Giants Castle Game Reserve (A/B), *Trauseld 997* (NU, PRE). Giants Castle, along river (BB), *Strey 6992* (PRE). Estcourt, *West 377* (PRE). Heronvale (DB), *Bryant 1277* (PRE).

29.30 (Pietermaritzburg): Mooi River (AA), *Wood 4035* (K). Drayton, Lions R. dist. (AC), *Wright 1560* (E, NU).

30.30 (Port Shepstone): Ixopo (AA), *State Veterinarian s.n.* (PRE-35803).

ORANGE FREE STATE: 26.27 (Potchefstroom): Parys (CD), *Rogers 2944* (PRE), *Smith 6280* (PRE).

27.26 (Odendaalsrus): Odendaalsrus roadsides (BC), *Vahrmeijer 3204* (PRE).

27.27 (Kroonstad): Kroonstad (CA), *Pont 466* (Z).

28.25 (Boshof): Dealesville-Bloemfontein (DB), *Goldblatt 4678* (MO).

28.26 (Brandfort): Virginia (BB), *Goldblatt 4677* (MO). Harmony, *Goldblatt 3412* (MO). N of Brandfort (CB), *Goldblatt 4679* (MO).

28.27 (Senekal): Senekal (CB), *DeWinter 8968* (K, PRE). Schutttes Draai, Ficksburg dist. (D), *Ross 1344* (NU). Ficksburg (DD), *Fawkes 5* (NBG).

28.28 (Bethlehem): Near Kestell (BC), *Strey 9074* (K, MO, PRE). Wodehouse, Buffelsfontein, *Stratton s.n.* (PRE).

28.29 (Harrismith): Rensburgskop, Swinburne (AC) *Jacobz 102* (PRE).

29.25 (Jagersfontein): Spitskop, Fauresmith (CB), *Verdoorn 1580* (PRE). Fauresmith Veld Reserve, *Henrici 1827* (PRE); *Smith 441* (PRE), *912* (PRE). Edenburg (DB), *Pole-Evans & Smith 1824* (PRE); *Smith 546A* (PRE).

29.26 (Bloemfontein): Bloemfontein (AA), *Kriel s.n.* (NBG); *Page s.n.* (BOL-17932); *Potts 2076* (BOL); *Gemmel s.n.* (PRE).

30.25 (Colesberg): Near Springfontein (BC), *Rogers 12122* (BOL); *Thode 5294* (STE).

30.26 (Aliwal North): "Trans Garipina," Nieuwejaarspruit, between Garip (Orange) and Caledon Rivers, foot of the Witbergen (DB), *Ecklon & Zeyher s.n.* (114.10) (S).

30.27 (Lady Grey): Zastron (AC), *DeKlerk 2* (PRE).

TRANSVAAL: 24.27 (Thabazimbi): Zyferkraal farm, Nylstroom distr. (BC), *Galpin M662* (PRE).

Zwagershoek, Nylstroom, *Rankin s.n.* (PRE-2754).

24.28 (Nylstroom): Rietvlei farm, Nylstroom distr. (CB), *Burt-Davy 2359* (PRE). Boekenhoutfontein, Naboomspruit distr. (DA), *Burger 471* (PRE).

24.30 (Pilgrims Rest): Ohrigstad Nature Reserve (DC), *Jacobsen 2952* (PRE). Pilgrims Rest (DD), *Rogers 14706* (K).

25.27 (Rustenburg): Koedoespoort (BD), *Janse s.n.* (PRE-3012). Marsh at Rustenburg (CA), *Moss 11213* (J). Zwartuggens, Rustenburg, *Sutton 940* (PRE).

25.28 (Pretoria): Rooikop, Elands R. (BA), *Pole-Evans 196* (PRE). "Aapjes R." (CA), *Burke s.n.* (K); *Leendertz s.n.* (PRE). Rietvlei, Pretoria, *Repton 4147* (PRE). Pretoria distr., *Mare s.n.* (K). Swartkops Golf Course, Pretoria (CC), *Killick 1531* (K, PRE). Near Bronkhorstspuit (DC), *Mauve 4118* (K, PRE); *Repton 447* (PRE).

25.30 (Lydenburg): Near Lydenburg (AB), *Wilms 1417* (BM, E, G, K, L, P, PRE). Belfast-Dullstroom (CA), *Balsinhas & Kersberg 2064* (PRE). Near Schoonwater, SE of Lydenburg (CD), *Davidson 3223* (MO).

26.25 (Delareyville): Barberspan Nature Reserve (DA), *Zambatis 694* (PRE).

26.26 (Klerksdorp): Lichtenburg (AA), *Pole-Evans 2281* (PRE). Hakboslaagte, *Kinges 1805* (PRE).

26.27 (Potchefstroom): Goedgedacht, Ventersdorp distr. (AA), *Sutton 755* (MO, PRE). Witpoortjie (BB), *Moss 2898* (J); *Gilliland s.n.* (J-26627, PRE). Klip R., at Discovery, *Lucas s.n.* (J). Near Potchefstroom (CA), *Hafström & Acocks 306* (PRE). Vereeniging (DB), *Moss 17313* (J); *Burt-Davy 5567* (PRE), *4695* (PRE). Visgat, E of Vereeniging *Codd 4469* (PRE).

26.28 (Johannesburg): Craighall, marsh (AA), *Lucas 315* (J); *Goldblatt 29, 34* (J). Langlaagte, *Burt-Davy 1984* (PRE). Park View Golf Course, *Moss 17311* (J, K). Mountain View, Johannesburg, *Moss 17312* (J). Marsh at Geduld (AB), *Moss 15606* (K). Heidelberg (AD), *Moss 17620* (J). 12.5 mi S of Greylingstad (DB), *Scheepers 1602* (K, PRE, WAG).

26.29 (Bethal): Bethal (AD), *Bosch s.n.* (PRE-35790). Standerton (CD), *Rogers 14800* (K, Z). Ermelo (DB), *Townsend s.n. sub Moss 15810* (K, PRE). Nooitgedacht farm, Emelo, *Henrici 1068, 1700* (PRE).

26.30 (Carolina): Carolina (AA), *Rogers 10500* (Z). Streambanks near Carolina, *Galpin 12220* (BOL, K, PRE). Bankop (CB), *Burt-Davy 1872* (BOL, K).

27.25 (Bloemhof): 8 mi S of Makwassie (BD), *Van Vuuren 1267* (G, K, PRE). Christiana distr. (CC), *Wolff s.n.* (PRE-35850).

27.29 (Volksrust): Marsh, Volksrust (DB), *Schlechter 3436* (BOL, PRE).

27.30 (Vryheid): Wakkerstroom (AC), *Burt-Davy 2208* (PRE).

7. *Homeria britteniae* L. Bolus, J. Bot. 69: 11. 1931. TYPE: South Africa, Cape, Grahamstown, *Britten 2951* (BOL; lectotype; K, isolectotype).—FIG. 10.

Plants medium, 20–45 cm high. *Corms* 10–15 mm in diameter. *Leaf* solitary, basal, often sheathing the lower part of the stem, erect or trailing, longer than the stem, channeled, to 9 mm wide, dark green. *Stem* erect, straight, the branches held close to the axis, occasionally unbranched, slightly flexed below the spathes, the stem bracts 6–8 cm long. *Spathes* initially 6–8 cm long, the inner about one-third longer than outer when young, but usually elongating considerably with age, becoming more than twice as long as the outer, enclosing the capsules. *Flowers* pale yellow to cream or white, the nectar guide deep yellow with green spots in the center, the lower part of the tepals forming a narrow tube round the filament column, the upper part of the tepals outspread, slightly twisted from horizontal; *outer tepals* 26–35 mm long, the claw 8–9 mm long, erect, the limb 8–13 mm wide, narrowly obovate or pandurate, widest in the upper third; inner tepals smaller, 21–35 mm long, 5.5–10 mm wide. *Filaments* 7–8 mm long, free in the upper 0.5–1.5 mm or virtually united entirely, the column cylindrical, smooth; *anthers* 6–7 mm, slightly exceeding the stigmas. *Ovary* (15–)18–24 mm long; *style* branching at the apex of the filament column; *branches* diverging and curved upward, 4–6 mm long, the stigma bilobed, broad, receptive laterally; crests short,



FIGURE 10. Morphology and distribution of *Homeria britteniae*. Habit $\times 0.5$; flower, outer tepal and corm $\times 1$; ovary, stamens and style branches $\times 1.5$, the top view much enlarged.

horizontal, 1–2 mm long. *Capsule* cylindrical, (18–)25–45 mm long. *Chromosome number* $2n = 12, 24$.

Flowering time: mid September–October.

Distribution: southern Cape from Knysna in the west to Grahamstown in the east; often in damp situations; Fig. 10.

Homeria britteniae is fairly common over its comparatively wide range, from about Knysna in the west to the Albany Division in the east. It most often grows

in sandy soils, usually in low-lying areas that are rather moist in the winter. Though often confused with *H. collina*, *H. cookii*, and other single-leafed species, it is comparatively easy to recognize by its very pale, sometimes white flower, dark green basal leaf, very long ovary, and even longer fruit. The basally inserted leaf and apically free filaments indicate an affinity with the *H. cookii-pallida* group. Its long ovary, usually about 20 mm long, and narrow tepal cup enclosing the filament column set *H. britteniae* apart from these species.

Plants from the eastern end of its range, around Grahamstown, have the shortest ovary, sometimes only 15 mm long, and fruits occasionally no more than 20 mm long, but this is still substantially longer than in the related *H. cookii* or *H. pallida*. Sometimes it is difficult to see whether the upper portion of the filaments is free, especially when flowers are carelessly pressed, and this may make accurate determination difficult. The basal leaf insertion and long ovary should then prevent any misidentification.

SOUTH AFRICA. CAPE: 33.23 (Willowmore): Keurbooms R.-Storms R. (C-D), *Gillett 4582* (BOL, K). Grootrivier Pass-Keurbooms R. (CD), *Goldblatt 4921* (M, MO, PRE, S). Longkloof, near Joubertina (DC), *Goldblatt 4947* (MO, NBG).

33.24 (Steytlerville): Near Gamtoos R., W of Humansdorp (DD), *Cassidy 229* (NBG).

33.25 (Port Elizabeth): Addo bush (BC), *Long 147* (K). Uitenhage distr. (CD), *Mund 18* (SAM), 25 (SAM); *Fries et al. 1160* (LD, S, SAM); *Zeyher s.n.* (K). Uitenhage, *Dahlstrand 555* (GRA, PRE). Port Elizabeth (DC), *Holland s.n.* (BOL-31552); *Cruden 467* (GRA). St. Georges Park, *Drège 295* (GRA). Prince Alfred Park, Port Elizabeth, *Cook s.n.* (BOL-20340, SAM-54104). Walmer, *Paterson 2125* (GRA). Swartkops R., Perseverance, *Rodin 1260* (BOL, K, MO, PRE, US).

33.26 (Grahamstown): Near Alicedale (AC), *Bayliss 8066* (MO). Drostdy, Grahamstown (BC), *Blackbeard s.n.* (BOL-31547); *Archibald 5310* (BOL, K); *Britten 2957* (GRA, and cult. at BOL, K); *Dyer 1645* (GRA, K, PRE). Grahamstown, *Bayliss 7629* (G, MO), 6846 (MO). Grahamstown, museum grounds, *Britten s.n.* (BOL-31546); *Schönland 1593* (PRE). Bathurst-Fish R. road (BD), *Bayliss 6723* (MO). Kap R. valley, *Bayliss 8957* (MO).

34.23 (Knysna): Keurbooms River, above the beach (AB), *Goldblatt 5197* (MO).

34.24 (Humansdorp): Witte Els Bosch (AA), *Fourcade 907* (BOL, GRA, STE). Humansdorp-Jeffreys Bay at Swarts R. (BB), *Fourcade 4005* (K, STE). Humansdorp-Cape St. Francis, *Goldblatt 4927* (MO).

8. *Homeria cedarmontana* Goldbl., sp. nov. TYPE: South Africa, Cape, Cedarberg, slopes half way up Cedarberg Pass, *Goldblatt 3871* (MO, holotype; K, NBG, PRE, S, US, WAG, isotypes).—FIG. 11.

Planta grandis ad 1 m alta. Cormus ca. 2 cm in diametro. Folia 2–3, inferior basale ad 50 cm longa, canaliculata. Caulis erecta, ramosa. Spathae 6–8 cm longae, exterior brevior. Flores lutei, tepala cupuliformi circa columna filamentorum; tepala exteriora ca. 4 cm longa, interiora breviora. Filamenta connata, 16–20 mm longa, puberula infra; antherae 9–10 mm longae. Rami styli ca. 7 mm longi, lati, cristis erectis 2–3 mm longis.

Plants large, 70–100 cm tall. *Corm* deep seated, between rocks, ca. 2 cm in diameter. *Leaves* 2–3, the lower basal, the others cauline, linear, to 50 cm long, erect, trailing in the upper part, channeled, to 2 cm wide. *Stem* straight, branching from the upper nodes, the branches short, held close to the axis, the stem bracts to 10 cm long. *Spathes* 6–8 cm long, the outer only slightly shorter than the inner. *Flowers* yellow, sweet scented, the tepals forming a narrow cup below, enclosing the filament column, spreading horizontally above; *outer tepals* ca. 4 cm long, the claw ca. 2 cm long, erect, the limb horizontal, flaccid; inner tepals somewhat smaller. *Filaments* entirely united, the column 1.6–2 cm long, included in the cup, puberulous in the lower half; *anthers* 9–10 mm long, arching outwards, often



FIGURE 11. Morphology and distribution of *Homeria cedarmontana*. Habit $\times 0.3$; flower and outer tepal $\times 1$; ovary, stamens and style branches $\times 1.5$, the top view $\times 3$.

contiguous at the apices, exserted from the cup. *Ovary* 11–14 mm long; *style* branching at the apex of the filament column; *branches* ca. 7 mm long, diverging, arched upward, the stigma lobe upright, appressed to the base of the crests, the receptive part on the inner lateral surface; crests erect, 2–3 mm long, either exceeding or shorter than the anther apex. *Capsule* clavate-cylindrical, to 2.5 cm long. *Chromosome number* $2n = 12$.

Flowering time: August–October at higher altitudes.

Distribution: local in the Cedarberg; on rocky sandstone slopes; flowering only after fires; Fig. 11.

Homeria cedarmontana is restricted to a limited area of the southern Cedarberg mountains, between Elands Kloof and Middelberg above Algeria. It is seldom seen—though it grows close to roads through Elands Kloof and through the Cedarberg—because it blooms only in the spring following a veld fire. In 1976 when I found the species, it was common and very conspicuous from the mid levels of the Cedarberg Pass and all the way up the Sneeberg. Hundreds of thousands of plants standing up to 1 meter tall and in full bloom grew on the rocky slopes. The following spring I found hardly a trace of the species in the same area, although a few slender, *Homeria*-like leaves appeared in places. After examining the extensive herbarium collections of *Homeria* I discovered that *H. cedarmontana* had been found twice before, by G. J. Lewis, once in Elands Kloof, and once at Middelberg above Algeria.

Its floral morphology indicates a relationship with the *H. collina* group (section *Homeria*) where its multi-leafed character suggests that it is fairly primitive. It is perhaps close to the line linking section *Homeria* with the generally less specialized section *Stipanthera*.

SOUTH AFRICA. CAPE: 32.19 (Wuppertal): Sneeberg, near hut, 1400 m (AC), *Howes s.n. sub Goldblatt 4289* (MO). Slopes of Cedarberg Pass, *Goldblatt 3871* (MO, K, NBG, PRE, S, US, WAG). Middelberg, 4000 ft, *Lewis s.n.* (BOL-31544); *Goldblatt 5146* (MO). Elands Kloof (CC), *Lewis s.n.* (BOL-22065).

9. *Homeria ochroleuca* Salisb., *Trans. Hort. Soc. London* 1: 308. 1812. TYPE: South Africa, Cape, without locality, illustration in *Bot. Mag. tab. 1103*. 1808 (*H. collina* var. γ) (*tab. 1283* cited in error by Salisbury).—FIG. 12.

Moraea ochroleuca (Salisb.) Drapiez, *Dict. Class Nat. Sci. (Encycl. 4. 1832 fide Index Kewensis)* 4: 477. 1841.

Homeria collina (Thunb.) Salisb. var. *ochroleuca* Baker, *Handb. Irid.* 75. 1892 et *Fl. Cap.* 6: 28. 1896.

H. exaltata Sweet, *Hort. Brit.*, ed. 1: 395. 1826. TYPE: South Africa, Cape, without locality, illustration in *Bot. Mag. tab. 1108* (*H. collina* var. γ). 1808.

Moraea exaltata (Sweet) Steud., *Nom. Bot.*, ed. 2, 2: 160. 1840.

Homeria lucasii L. Bolus, *S. African Gard.* 19: 320. 1929. TYPE: South Africa, Cape, without locality, *Lucas s.n.* (BOL-18572, holotype; K, isotype).

Plants medium to large, 35–75 cm high. *Corms* 1.5–2.5 cm in diameter. *Leaves* 1–3, usually solitary, the lower inserted well above ground level, channeled, longer than the stem, often trailing above, 6–15 mm wide. *Stem* erect, the leaf inserted up to 15 cm above ground, producing 1–several branches from the upper or all nodes, the branches simple, the stem bracts 6–7 cm. *Spathes* (5–)6–8 cm long, the outer about half the inner. *Flowers* yellow entirely, or orange in the center, or occasionally orange entirely, strongly scented, the tepals forming a wide cup, recurved-spreading in the upper half; *outer tepals* 30–40 mm long, the lower part (claw) 13–16 mm long, the nectary area not at the base but diffuse around the middle of the claw, the limb obovate, 15–17 mm wide; inner tepals similar, slightly smaller, also nectiferous. *Filaments* united, the column 7–10 mm

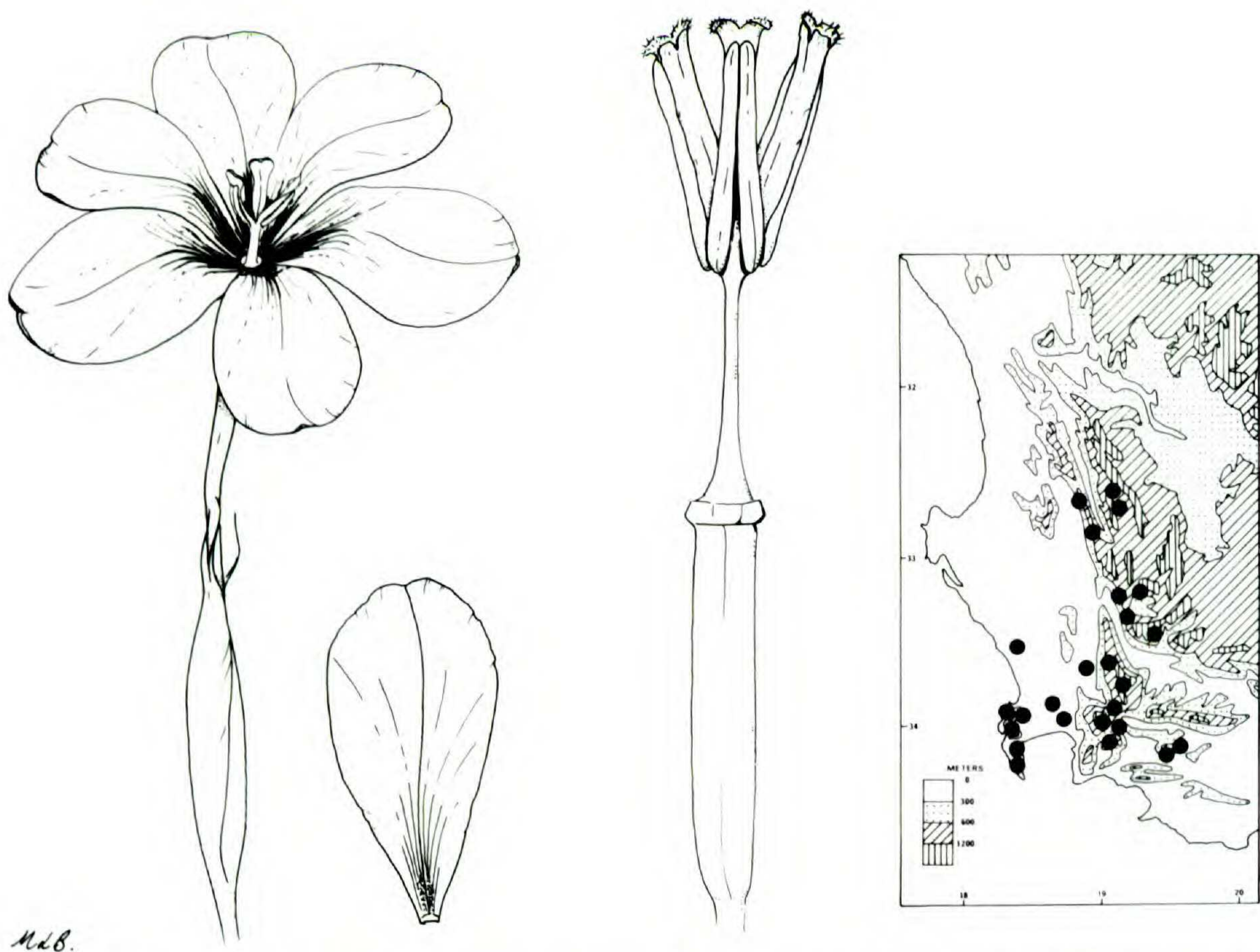


FIGURE 12. Floral morphology and distribution of *Homeria ochroleuca*. Flower and outer tepal $\times 1$; ovary, stamens and style branches $\times 3$.

long, slightly tapering from the base to the apex, smooth; *anthers* 4.5–8 mm long, diverging, straight or slightly arched. *Ovary* 13–16 mm long; *style* dividing just above the anther base; *branches* 5–6.5 mm long, diverging, straight, about as wide as the anthers, the stigma bilobed, held above the anther apex; crests absent, or very short, not exceeding the stigmas and obtuse. *Capsule* 2–3(–4) cm long, cylindrical, with a short beak ca. 1 mm long. *Chromosome number* $2n = 12, 24, 24 + 0-3B$.

Flowering time: (May–)June–November(–December), usually later at higher altitudes.

Distribution: mountains and flats, from Caledon and Hermanus in the south, to the Olifants River Mountains and Cold Bokkeveld Mountains as far north as Citrusdal; only on sandstone-derived soils; blooming only in the winter-spring after fires; Fig. 12.

Homeria ochroleuca is typically a montane species and it is a common constituent of the mountain fynbos flora in the western half of the Cape Floristic Region, from Hermanus to Citrusdal. It is seldom seen in flower except in seasons immediately following a severe veld fire, and then it appears in large numbers on mountain slopes and flats where the soil is derived from sandstones of the Table Mountain Series. Higher altitude forms sometimes have two or three leaves, although most collections from all altitudes are of solitary-leaved plants. *Homeria lucasii*, reduced to synonymy here, represents the bifoliate form. The original

locality of the type collection of the synonym is unknown. Other two- or three-leaved collections are *Leighton 1332* from the foot of the Witsenberg (the gathering includes single-leaved plants); and *Goldblatt 4205A*, from Fonteintjiesberg near Worcester.

The flower of *H. ochroleuca* is unique in *Homeria* in having diffuse nectaries, located in the median area of the claw of both the inner and outer tepals, whereas all other species have a distinct nectary at the base of only the outer tepals. This character is of little value in identifying dry material as the nectary is always difficult to see. *Homeria ochroleuca* can, however, be distinguished from related single-leaved species by its wide tepal cup, glabrous tepals and filament column, large and diverging anthers and style branches, the latter without obvious crests. Difficulties with identification arise only when flowers are poorly pressed.

Flowers of *H. ochroleuca* last three days, opening in mid morning on the first day, and fading gradually during the third day. The flowers have a strong, rather sickly sweet odor, which attracts flies, the main pollinators. At lower altitudes *H. ochroleuca* often occurs together with or near *H. collina*, and occasional natural hybrids between the two are sometimes found.

There is a slight problem in typifying *H. ochroleuca*, since Salisbury, when giving a specific name to Ker's *Moraea collina* var γ cited the *Botanical Magazine* figure 1283 which is *M. spicata* (i.e., *Homeria elegans*) instead of fig. 1103, the type figure for *M. collina* var. γ . Since *H. ochroleuca* was intended as a new name for *M. collina* (γ) and its (albeit very brief) diagnosis serves as the description also for *H. ochroleuca*, the *Botanical Magazine* figure 1103 is the type, and we must assume Salisbury simply erred in citing figure 1283.

SOUTH AFRICA. CAPE: 32.19 (Wuppertal): Elandskloof (CA), *Barker 3097* (NBG); *Lewis s.n.* (BOL-21857, BOL-31576, PRE). Middelberg, Elandskloof, *Thompson 2938* (MO, STE).

33.18 (Cape Town): Mamre hills (AD), *Barker 1767* (NBG). Near Ganzekraal turnoff from Darling road, *Barker 789* (NBG). Camps Bay Drive (CD), *Steyn 183* (NBG); *Morris 129* (NBG). Slopes above Camps Bay, *Kensit s.n.* (BOL-31575). Platteklip, *Marloth 6276* (PRE). Table Mt., *H. Bolus 2811* (K). Devils Peak, 1200 ft, *H. Bolus 3790* (BOL, K); *MacOwan s.n.* (SAM-20642). Newlands, *Wolley Dod 594* (K); *Page s.n.* (BOL-16188). Wellington (DB), *Moss 2891* (J). Langverwacht, Kuils R. (DC), *Oliver 4773* (K, STE). Hercules Pillar (DD), *Salter 8670* (BOL). Jonkershoek, *Werdemann & Oberdieck 342* (B).

33.19 (Worcester): Gydo (AB), *Leipoldt 3016* (BOL, K). Base of the Witsenberg (AC), *Leighton 1332* (BOL). Michells Pass (AD), *Walgate 372* (BOL, NBG). Near Lakenvlei (BC), *Phillips 2065* (SAM). Bains Kloof (CA), *Barker 4658* (NBG). Fonteintjiesberg, 4000 ft (CB), *Goldblatt 4205A* (cult.) (MO). French Hoek Pass (CC), *Bond 362* (NBG); *Barker 243* (NBG); *Boucher 2302* (K, PRE, STE).

34.18 (Simonstown): Kalk Bay Mt. (AB), *Barker 4202* (NBG); *Goldblatt 2142* (MO, NBG, WAG), *3651* (MO, PRE). Clovelly, *Walgate s.n.* (BOL-31553, SAM-54332). Chapmans Peak, *Van Niekerk 463* (NBG). Karbonkelberg, *Compton 13631* (NBG), *16360* (NBG); *Leighton 682* (BOL). Imhoffs Gift, *Barker 4574* (NBG). Hillside above Kommetje, *Lewis 2497* (SAM). Simonstown, *Zeyher 113* (BOL). Slopes of Constantiaberg, *Acocks 4407* (S). Above Smithwinkel Bay (AD), *Phillips s.n.* (G, M); *Barker s.n.* (BOL-20959, K). Cape Point, *Rogers 28565* (GRA, J, K, Z), *30147* (G, Z). Disa Gorge, Bettys Bay (BD), *Boucher 1396* (K, PRE, STE, WAG).

34.19 (Caledon): Flats between French Hoek and Viljoens Passes (AA), *Davis s.n.* (SAM-60202). Lebanon Forest Reserve, *Kruger 481* (NBG, STE). 2 km E of Caledon, on Swartberg slopes (AB), *Goldblatt 4127* (MO, PRE, WAG). Caledon, *Penther 760* (Z).

Without locality: *Lucas s.n.* (cult. Rondebosch) (BOL-18572); *H. H. Bolus s.n.* (ex hort. Lucas, cult. Kenilworth) (BOL-18752, -18640).

10. *Homeria bulbifera* Lewis, J. S. African Bot. 11: 117. 1945. TYPE: South Africa, Cape, Caledon Div., Riviera, *Purcell s.n.* (SAM-54696, holotype).—
FIG. 13.

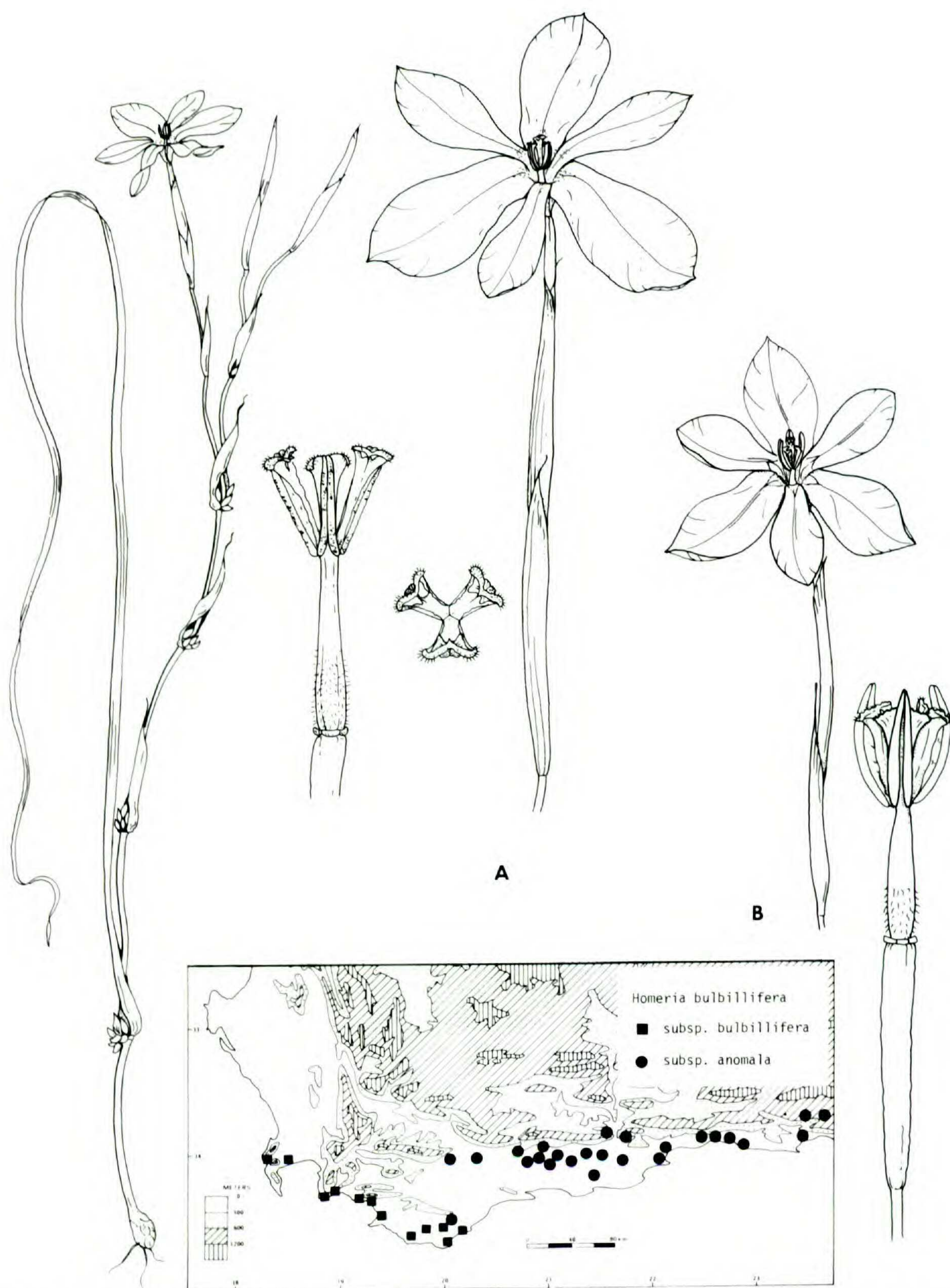


FIGURE 13. Morphology and distribution of *Homeria bulbifera*.—A. Subsp. *bulbillifera*.—B. Subsp. *anomala*. Habit $\times 0.4$; flowers $\times 1$; ovary, stamens and style branches $\times 3$.

Plants 30–50(–60) cm tall. *Corm* 10–20 mm in diameter, sometimes bearing many cormlets round the base. *Leaf* solitary, usually inserted at or near ground level, rarely far above ground level, longer than the stem, channeled, 5–10 mm wide. *Stem* erect or more or less trailing, usually much branched, flexed above

the leaf sheath and above the stem bracts, the latter 3.5–8 cm long, the stem sometimes bearing several to many cormlets in the axils of the leaf and stem bracts. *Spathes* 4–8 cm long, the outer about half the inner, the inner elongating after flowering, sheathing the young fruits. *Flower* pale or deep yellow, occasionally pale pink, or flushed pink-orange, the nectar guide dark yellow spotted green, the tepals forming a small narrow cup 7–10 mm deep, enclosing the filaments and the lower part of the anthers, spreading above; *outer tepals* 23–38 mm long, the claw 9–11 mm long, the limb 10–16 mm wide, obovate; inner tepals slightly smaller, 7–12 mm wide. *Filaments* united, 6–8 mm long, the column cylindrical, papillate or smooth; *anthers* 4–6 mm long, diverging. *Ovary* 7–12(–13) mm long; *style* dividing at the apex of the filament column; *branches* diverging (2.5–)3–6 mm long, usually just shorter than the anthers, the stigma upright, pressed against the anther in the middle, receptive on the inner lateral surface; crests 1–2 mm long, extending inwards. *Capsule* 17–20(–22) mm long, cylindrical-clavate. *Chromosome number* $2n = 12, 18, 24$.

Flowering time: August–early October inland, September–early November along the coast.

Distribution: southern Cape, from the Peninsula in the west to the Albany district in the east, south of the Langeberg-Outeniqua axis, and most frequent between Elim and Knysna, along the coast, and in the Langeberg foothills; Fig. 13.

Homeria bulbillifera is a common species in the southern Cape, but surprisingly was only described in 1945 (Lewis, 1945). Previously the species had been included either in *H. collina*, or *H. ochroleuca*, or simply left unnamed.

The coastal forms, which are strongly cormiferous, are unmistakable since the only other species of *Homeria* with this characteristic is a Natal form of *H. pallida*. However, even nonbulbilliferous forms are fairly easy to distinguish from other single-leafed species by their open flowers, with the narrow tepal cup enclosing only the filaments, while the anther and well-developed style branches and crests extend well above the cup. The single leaf is usually inserted at or very close to the ground, but plants from the drier valleys on the northern edge of its range are often confusing as the leaf may be inserted rather high above ground.

Two subspecies are recognized. The typical subsp. *bulbillifera* is coastal and always found on sand or limestone. It is usually robust and has a well-developed cormiferous habit. Subspecies *anomala* occurs inland from the coast, mainly in renosterbos veld, on the rolling clay plains of the southern Cape, and it extends into the sandy and rocky valleys of the Riviersondered and Langeberg mountains. It may be as robust as subsp. *bulbillifera* but in drier habitats is a much smaller plant, with the dwarfing extending to the flowers as well.

Homeria bulbillifera, with its more or less basal leaf, several to many branches, and open flower with distinct style branches and crests is one of the least specialized species of section *Homeria*. It is probably close to the ancestral forms which gave rise to the several specialized species of the section which occur to the west and northwest of its range.

KEY TO THE SUBSPECIES

1. Stems conspicuously cormiferous at the aerial nodes, the cormlets breaking through the bracts a. subsp. *bulbillifera*
 1'. Stems not cormiferous at the nodes (rarely a single corm may develop at some nodes, always concealed by the bracts) b. subsp. *anomala*

a. Subspecies *anomala* Goldbl., subsp. nov. TYPE: South Africa, Cape, Witsands road near Ossekop, *Goldblatt 4885* (MO, holotype; BR, K, NBG, PRE, WAG, isotypes).—FIG. 13B.

Folium basale vel in inferiore parte caulis insertum. Caulis non cormiferus in nodis, usitate pluriramosus. Spathae 4–7 cm longae, graciles. Flores usitate breviores quam subsp. *bulbillifera*; tepala exteriora 26–35 mm longa, 10–15 mm lata; interiora 23–32 mm longa. Filamenta 6–8 mm longa; antherae 5–6 mm longae, ramos styli excedentes.

Leaf basal or inserted in the lower part of the stem, usually erect, or trailing distally. *Stem* not cormiferous at the nodes, the branches usually many, (1–)10–20, the stem bracts 3–6 cm long. *Spathes* 4–7 cm long, slender. *Flowers* usually smaller than subsp. *bulbillifera*; *outer tepals* 26–35 mm long, 10–15 mm at the widest; *inner tepals* 23–32 mm long. *Filaments* 6–8 mm long; *anthers* 5–6 mm long, longer than the style branches, the apices curving inward after anthesis. *Chromosome number* $2n = 12, 24$.

Flowering time: August–October.

Distribution: Stormsvlei and Bredasdorp in the west, along the Langeberg–Outeniqua axis and as far east as the Albany district; on clay or sand, and inland or coastal; Fig. 13.

Subspecies *anomala* is more variable than subsp. *bulbillifera* and occurs in a wide range of habitats from moist sandy stream banks to the dry interior valleys of the Langeberg and Riviersonderend mountains. Flower size and point of leaf insertion are characteristics in which the two subspecies differ. Flowers of subsp. *anomala* are usually smaller, and the outer tepals rarely reach 35 mm in length. The produced leaf may be basal as in subsp. *bulbillifera*, but it is often inserted shortly, to well above ground level. Plants will on occasion have one or two cormlets at some nodes, but this development is much less noticeable than the proliferation characteristic of subsp. *bulbillifera* (e.g., *Loubser 885*, Swellendam) where the many cormlets break through the stem bracts. These forms do, however, represent intermediates between the subspecies and determination becomes rather arbitrary.

SOUTH AFRICA. CAPE: 33.20 (Montagu): Hill below Crown Mt., Swellendam (CD) *Wurts 305* (NBG); *Marsh 845* (STE).

33.21 (Ladismith): Cloetes Pass–Wagenbooms, N of Langeberge (DC), *Goldblatt 4168* (MO). Cloetes Pass (DD), *Goldblatt 4157* (K, MO, PRE, S, WAG).

33.22 (Oudtshoorn): Edge of Rondevlei, near Sedgefield (DC), *Bayliss 6828* (M). Klein Swart R. valley, *Gillett 1244* (BOL, STE).

33.23 (Willowmore): 22 km W of Lauterwater (CB), *Marsh 1409* (K, STE). Lauterwater, W of river (DC), *Fourcade s.n.* (STE).

33.26 (Grahamstown): Cradock road, Albany distr. (A), *Bayliss 6858* (MO).

34.19 (Caledon): The Poort, Bredasdorp (DB), *Wasserfall 381* (NBG), *400* (NBG); *Goldblatt 4856* (C, LE, MO, PRE, WAG).

34.20 (Bredasdorp): Stormsvlei Kloof (AA), *Goldblatt 4130* (MO, PRE, WAG). 25 km W of Swellendam, Bromberg slopes, *Goldblatt 4883* (MO, S). Swellendam (AB), *Loubser 885* (NBG), *2089*

(NBG). Bontebok Park, *Grobler 420* (STE); *Barnard 605* (PRE); *Liebenberg 6354* (PRE, STE). Witsands road near Ossekop (BA), *Goldblatt 4885* (BR, K, MO, NBG, PRE, WAG). Near Buffeljagsrivier, *Goldblatt 4137* (MO). Heidelberg-Swellendam (BB), *Rycroft 2849* (NBG). Near Heidelberg, *Galpin 4653* (BOL, GRA, K, PRE).

34.21 (Riversdale): Riversdale (AB), *Anderson s.n.* (BOL-15456). Hills near Riversdale, *Muir 2695* (BOL). 17 mi W of Albertinia, *Lewis 5568* (NBG). Riversdale-Stilbaai, limestone hills (AC), *Goldblatt 4151* (MO, PRE). Albertinia (BA), *Fries et al. 1366* (K, LD, PRE, S); *Muir 1089* (BOL). 10.1 mi E of Albertinia, *Thompson 550* (K, PRE, STE). Herbertsdale turnoff from Mossel Bay road, (BB), *Schlieben & Ellis 12344* (PRE, STE). Near Melkhoutfontein (BD), *Thompson 2014* (PRE).

34.22 (Mossel Bay): Meadows near Mossel Bay (AA), *Cassidy 240* (NBG). Between Groot and Klein Brak rivers, *Mauve 4571* (K, PRE, STE). W side of Great Brak R., *Burchell 6149* (K). Groenvlei-Wilderness (BB), *Martin s.n.* (NBG-59325). Sedgfield, edge of Swartvlei, *Goldblatt 4920* (MO). Belvedere, *Gillett 2191* (STE).

34.23 (Knysna): Knysna Heads (AA), *Gillett 2177* (STE). Near Knysna, *Wurts 2265* (NBG). Matjesfontein, Keurbooms R. (BB), *Fourcade 4803* (K).

34.24 (Humansdorp): Humansdorp-Jeffreys Bay (BB), *Fourcade 4005* (K).

Without precise locality: Knysna-George, *Rodin 1318* (BOL, K, PRE).

b. Subspecies *bulbillifera*.—FIG. 13A.

Leaf basal, often trailing. *Stem* bulbiferous at the nodes, the branches 1–5(–10), usually from the upper nodes, the stem bracts 3.5–6 cm long. *Spathes* 5–8 cm long, thick and inflated. *Flowers* fairly large; *outer tepals* 23–38 mm long, (10–)14–16 mm at the widest; *inner tepals* 22–32 mm long. *Filaments* 6–7 mm long; *anthers* 4.5–6 mm long, usually about as long as the style branches, sometimes longer. *Chromosome number* $2n = 12$ (18).

Flowering time: mid September–November.

Distribution: Cape Agulhas to Peninsula; sandy soils, near the coast; Fig. 13.

Subspecies *bulbillifera* is always easily recognized by its conspicuous cormiferous habit. Although usually bearing several branches, the stems often appear attenuated. The lower nodes often lack branches, and the stem sometimes becomes more or less trailing. This subspecies is restricted in distribution to sandy or rarely limestone-derived soils and occurs mainly along the coast. Many collections of this subspecies have no developing capsules, and it seems likely that at least some populations are sexually sterile. The copious cormlets presumably ensure propagation of these sterile forms.

SOUTH AFRICA. CAPE: 34.18 (Simonstown): Karbonkelberg, Cape Peninsula (AB), *Compton 16358* (NBG); *Leighton 419* (BOL), *681* (BOL, PRE, SAM); *Goldblatt 2988* (BR, C, MO, S, WAG). Little Lions Head, *Compton 18576* (NBG). Rondevlei, Cape Peninsula (BA), *L. Bolus s.n.* (BOL-22944, K). Bettys Bay (BD), *Loubser 960* (NBG). Cape Hangklip, *Goldblatt 2988* (K, MO, S, WAG).

34.19 (Caledon): Onrus R., near sea (AC) *Gillett 4399* (MO). Hawston, *Marloth 9197* (PRE). Hermanus, Campsite (AD), *Lussem 9* (NBG). Gansbaai (CB), *Gillett 4322* (BOL, K, MO). Ratel River flats near Quoin Pt. (DA), *Goldblatt 470* (BOL). The Poort, Bredasdorp (DB), *Lewis s.n.* (BOL-21231). 22 m from Arniston towards Elim, *Marsh 916* (PRE, STE).

34.20 (Bredasdorp): Die Mond (CA), *Compton 22118* (NBG). Near Struys Bay (CC), *Leipoldt 3569* (BOL).

11. *Homeria comptonii* L. Bolus, S. African Gard. 19: 294. 1929. TYPE: South Africa, Cape, near Villiersdorp, *Compton s.n.* (BOL, lectotype; K, isolecotype).—FIG. 14.

H. maculata Klatt, pro parte et sensu auct. (Linnaea 34: 627. 1866); Baker, Fl. Cap. 6: 27. 1896, pro parte.



FIGURE 14. Morphology and distribution of *Homeria comptonii*—both maculate and unmarked flowered forms. Habit ca. $\times 0.5$; flowers, outer tepal and corm $\times 1$; ovary, stamens and style branches $\times 1.5$, the top view much enlarged.

Plants 18–30 cm tall. *Corms* 10–15 mm in diameter. *Leaf* solitary, inserted at or near ground level, linear, canaliculate, erect, or if much exceeding the stem, trailing. *Stem* erect, bearing several branches, the stem bracts 4–6 cm long. *Spathes* 7–10 cm long at flowering time, the inner initially about twice the outer, much elongating after flowering, and enclosing the capsules. *Flowers* large,

yellow entirely, or pink to orange with a yellow center, with or without large dark green nectar guides on the outer or both tepal whorls, the tepals not clearly divided into claw and limb, but the lower parts forming an open cup and the upper parts patent, to slightly recurved, heavily and sweetly scented; *outer tepals* 32–52 mm long, glabrous, often distinctly pandurate or spatulate, 13–18 mm wide, widest in the upper third; *inner tepals* 30–50 mm long, 8–15 mm wide. *Filaments* united, 6–8 mm long, pubescent in the lower two-thirds, wide at the base, tapering towards the apex; *anthers* (8–)10–13 mm long, diverging, usually shorter than the style branches, occasionally just reaching or exceeding the stigmas. *Ovary* ca. 18 mm long, entirely or partly enclosed in the spathes; *style* dividing 2.5–5 mm above the anther base; *branches* diverging, 6–10 mm long, the stigma lobe spread horizontally, with two erect to incurved crests ca. 1 mm long, the stigma usually well above the apex of the anthers. *Capsules* initially enclosed in the inner spathe, 25–30 mm long, cylindrical. *Chromosome number* $2n = 12$.

Flowering time: late August–September.

Distribution: Caledon district, from Villiersdorp and Bot River west to Caledon and Akkedisberg Kloof; heavy clay soils; Fig. 14.

For many years the yellow-flowered form of *Homeria comptonii* with green markings on the lower part of the tepals was known as *H. maculata* Klatt. One of the specimens cited by Klatt in the description of the species is the maculate form of *H. comptonii* (*Ecklon & Zeyher Irid* 38, “Langehoogde”) but the other, *Ecklon & Zeyher Irid* 259, is *Moraea insolens* Goldblatt, and this was made the lectotype of *H. maculata*, which thus became a synonym of *M. insolens* (Goldblatt, 1971b).

The large-flowered, typical form of *H. comptonii* has clear yellow, or orange blooms, and occurs in the northern part of the range of the species, between the Bot River-Caledon main road and Villiersdorp. H. M. L. Bolus who described *H. comptonii* in 1929 believed it distinct from *H. maculata*, although closely related. Further collecting in the Caledon-Bot River area has revealed a wide range of variants between the bright orange, large-flowered plants in the north, and yellow-flowered plants with green spots, east and south of Bot River. Thus populations northeast of Bot River, e.g., *Goldblatt* 3997, have unmarked yellow, or pale orange flowers; plants to the southeast near the Leeu River have yellow flowers with markings on the outer and sometimes the inner tepals, e.g., *Goldblatt* 3990; and populations further east at the foot of Babylons Tower, e.g., *Goldblatt* 4020, 4022, consist of plants with yellow or orange or cream-colored flowers with or without green markings on the tepals. In all characteristics other than flower color and marking, plants from all these populations are essentially alike, being distinguished by the single, basal leaf, comparatively large flower with pandurate to spatulate tepals, a strong sweet scent, style dividing well above the apex of the filament column, and style branches usually exceeding the anthers.

Homeria comptonii is closely related to *H. elegans*, and although the two can usually be distinguished with ease, some populations of *H. comptonii* may be confused. Differences between the two species are discussed in detail under *H. elegans*, the following species in the treatment.

Milne-Redhead (1937) believed *H. comptonii* (though not *H. maculata*) to be

conspecific with *H. collina*, in which he also included *H. ochroleuca* and *H. flaccida* (as *H. aurantiaca*), and he explained his reasons under a good illustration of *H. comptonii* (*Botanical Magazine*, tab. 9457) named *H. collina*. I do not wish to dwell on this point of view, except to point out that no opinion concerning the systematics of *Homeria* is of much value if based mainly on the knowledge of dried plants. In the field the four species Milne-Redhead places in *H. collina* appear morphologically distinct, and each has its own geographic range, characteristic habitat, ecological preference, and flowering time. All occur in parts of the Caledon district, and can always be distinguished, with ease, when alive.

SOUTH AFRICA. CAPE: 34.19 (Caledon): Near Bot River (AA), *Guthrie s.n.* (BOL-16910). Bot R. distr., *Garside 4479* (K), *4496* (K). N of Bot R. near Vyeboom, *Goldblatt 289* (BOL). Near Villiersdorp (AB), *Compton s.n.* (BOL, K). "Langehoogde," *Ecklon & Zeyher Irid 38* (B). N slopes of Eseljagt Pass, *Barker 10577* (K, MO, NBG); *Goldblatt 2633* (MO, NBG). Goedvertrou-Caledon/Villiersdorp road, *Goldblatt 3997* (K, MO, PRE, WAG, US). Main road Bot R.-Boontjieskraal, *Pillans 6675* (BOL, K). Caledon-Bot R., burnt area, *Fairall 187* (BOL, NBG). Caledon-Villiersdorp, *Barker 19* (K), *20* (BOL, K). S of Bot R. between Albertyn and Leeu River (AC), *Barnard s.n.* (MO, NBG-100438, PRE); *Goldblatt 3990* (BR, MO, S). S of Caledon-Bot R. road, towards foot of Babylons Tower (AD), *Goldblatt 4020* (MO, US), *4022* (K, MO, NBG, PRE, WAG). Akkedisberg Pass, 10 km N of Stanford (BC), *Goldblatt 4845* (K, MO, NBG).

12. *Homeria elegans* (Jacq.) Sweet, Hort. Brit., ed. 1: 395. 1827; Baker, Fl. Cap. 6: 27. 1896.—FIG. 15.

Moraea elegans Jacq., Pl. Hort. Schoenbr. 1: 6, tab. 12. 1797. TYPE: South Africa, Cape, exact locality unknown, illustration in Pl. Hort. Schoenbr. 1: tab. 12.

Sisyrinchium elegans (Jacq.) Willd., Sp. Pl. 3: 577. 1801.

Moraea spicata Ker, Bot. Mag. tab. 1283. 1810. TYPE: South Africa, Cape, exact locality unknown, illustration in Bot. Mag. tab. 1283.

Homeria spicata (Ker) Sweet, Hort. Brit., ed. 1: 395. 1827.

H. metelerkampiae L. Bolus, S. African Gard. 18: 116. 1928. TYPE: South Africa, Cape, cultivated in Mr. Metelerkamp's garden, Wellington, origin unknown, (but possibly near Genadendal, fide *Marloth 9253*, PRE), *Metelerkamp s.n.* (BOL-31545, lectotype; K, isolectotype).

Plants 15–30 cm tall. *Corms* 10–12 mm in diameter. *Leaf* solitary, inserted at or near ground level, linear, channeled, to 10 mm wide, erect, or if much exceeding the stem, trailing. *Stem* erect, bearing few to several branches, the stem bracts 5–7 cm long. *Spathes* 7–10 cm long, the inner initially about twice the outer, much elongating after flowering and enclosing the capsules. *Flowers* large, yellow in the center, with a large green blotch in the mid or upper third of each outer tepal, and usually orange distally, the tepals not clearly divided into claw and limb but the lower parts more or less forming a cup, and the upper parts patent, strongly and sweetly scented; *outer tepals* 28–35 mm long, oblong or ovate, the claw narrow, 13–15 mm wide, widest in the lower third; *inner tepals* 26–38 mm long, about as long or occasionally longer than the outer, 10–11 mm wide. *Filaments* united, 5–7 mm long, the column pubescent in the lower two-thirds, widest at the base, tapering towards the apex; *anthers* 8–10 mm long, diverging, usually exceeding the style branches, the tips curving inward after anthesis. *Ovary* 12–15 mm long, usually entirely included in spathes; *style* branching shortly above the anther base; *branches* diverging, ca. 6 mm long, shorter than the anthers; the stigma erect, appressed to the anthers; *crests* 1–2 mm long, incurved. *Capsule* included in the spathes, to 25 mm long, cylindrical. *Chromosome number* $2n = 12$.

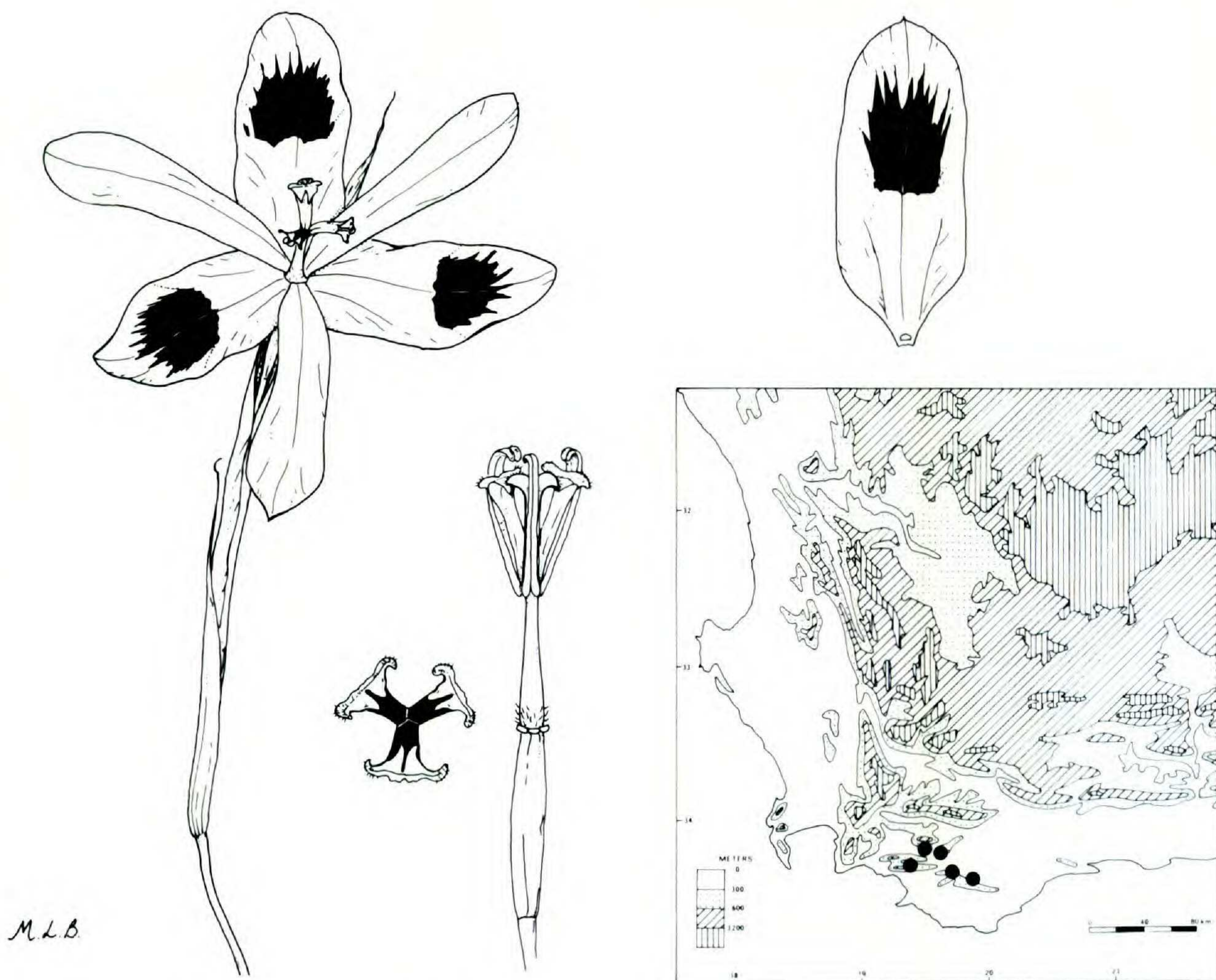


FIGURE 15. Floral morphology and distribution of *Homeria elegans*. Flower and outer tepal $\times 1$; ovary, stamens and style branches $\times 1.5$, the top view much enlarged.

Flowering time: late August–early October.

Distribution: Caledon district, from Caledon eastwards along the foot of the Zwartberg, and north of the Klein River mountains from Tesslaarsdal to Fairfield and southeast to Bredasdorp; clay soils; Fig. 15.

Homeria elegans is closely related to *H. comptonii*, and the two species have complementary ranges in the Caledon and Bredasdorp district in the southwestern Cape. They are generally easy to distinguish, although some populations of *H. comptonii* approach *H. elegans* in appearance. Generally *H. elegans* has oblong outer tepals, sometimes broadest in the lower half, and large green blotches in the mid or upper third of the outer tepals. The style branches divide at the top of the filament column and are distinctly shorter than the anthers. In contrast *H. comptonii* has spatulate or pandurate outer tepals, either unmarked or with markings in the mid or lower third of the tepals. The style branches divide well above the anther base and exceed the anthers by 2 mm or more.

The type of *H. elegans*, an illustration published by Jacquin, shows all the critical features of the plant, except that the outer tepals are not quite oblong. They have a barely perceptible narrowing in the middle, and seem as wide at the apex as at the base. However, the point of division of the style and the long

anthers clearly accord with wild plants assigned to this species. *Homeria elegans* is variable in floral markings. The yellow flowers are most often marked with large oval green blotches on the upper half of the outer tepals which are bright orange distal to the markings. Occasionally the tepals are not tipped with orange, as in the type figure, and sometimes the markings themselves are partly or entirely orange on a yellow background.

With some hesitation I place *H. metelerkampiae* as a synonym of *H. elegans*. This species, known only from plants cultivated in a garden in Wellington, may have come from near Genadendal, if the note to this effect on the label of *Marloth* 9253 is correct. It is very like *H. elegans* in most critical features, having a single, basal leaf and similar-sized spathes and flowers. Like *H. elegans*, the style divides near the top of the filament column, and the anthers exceed the style branches. The only feature that is discordant is the markings, which in the yellow-flowered *H. metelerkampiae* are large green blotches located on the reverse of all six tepals. In contrast, all known wild forms of *H. elegans* have markings on the inside of the outer tepals. *Moraea spicata* is probably also a synonym of *H. elegans*. The type of this species is a figure in the *Botanical Magazine*, but is poorly drawn, which may be explained by the fact that the illustration was made from dried material.

Homeria elegans is becoming increasingly rare in the wild as agriculture has spread through the Caledon district, leaving little untouched vegetation in its wake. A few small colonies, along road verges, steeper banks and very rocky sites, remain, but are seriously threatened by road building activities, the spread of agricultural weeds, the effects of fertilizers changing soil fertility, and aerial spraying of weed killers. This *Homeria*, one of the most valuable for horticulture, may well become extinct in the next decade.

SOUTH AFRICA. CAPE: 34.19 (Caledon): Swartberg near Caledon (AB), *MacOwan s.n.* (Herb. Norm. Aust. Afr. 799) (B, G, K, P). Slopes of Caledon Swartberg, *Templeman s.n. sub MacOwan* 2613 (S). Caledon-Napier (B), *Barker s.n.* (BOL, K, SAM). Genadendal (BA) (cultivated in Wellington), *Marloth* 9253 (PRE). Near Krige, E of Caledon (BB), *Goldblatt* 4879 (MO). Kleinrivierskloof (BC), *Zeyher* 4073 (GRA, K, P, PRE, S, SAM). Near Tesslaarsdal, *Goldblatt* 4095 (K, MO, PRE, S, WAG). 8 mi SE of Oudekraal, *Salter* 4799 (BOL, K). Near Fairfield, Caledon-Napier road (BD), *Goldblatt* 4852 (MO).

34.20 (Bredasdorp): Bredasdorp district (C), *Van der Byl s.n.* (K).

Without locality: *Sparrman s.n.* (S).

13. *Homeria flaccida* Sweet, Hort. Brit., ed. 1: 395. 1826. TYPE: South Africa, Cape, without locality, illustration in Bot. Mag. tab. 1612. 1814 (*H. collina* var. *miniata minor* Ker).—FIG. 16.

Moraea flaccida (Sweet) Steud., Nom. Bot., ed 2, 2: 160. 1840.

Homeria collina (Thunb.) Salisb. var. *flaccida* (Sweet) Klatt, Linnaea 34: 629. 1865.

H. aurantiaca (Zuccagni) Sweet sensu Sweet, Hort. Brit., ed. 2: 498. 1830. (Comb. based on *Sisyrinchium aurantiacum* Zuccagni in Roemer, Coll.: 145. 1809, identity unknown).

Moraea aurantiaca (Zuccagni) A. Dietrich sensu A. Dietrich, Sp. Pl. 2: 485. 1833.

Homeria collina var. *aurantiaca* (Zuccagni) Baker sensu Baker, Handb. Irid. 75. 1892 et Fl. Cap. 6: 28. 1896.

H. breyniana (L.) Lewis var. *aurantiaca* (Zuccagni) Lewis sensu Lewis, Fl. Cape Pen. (ed. Adamson & Salter) 232. 1950.

H. collina var. *bicolor* Baker, Handb. Irid. 75. 1892 et Fl. Cap. 6: 28. 1896. TYPE: South Africa, Cape, Stellenbosch, *Sanderson s.n.* (K, holotype).

H. bicolor (Baker) Klatt in Th. Durand & Schinz, Consp. Fl. Afric 5: 157. 1895.

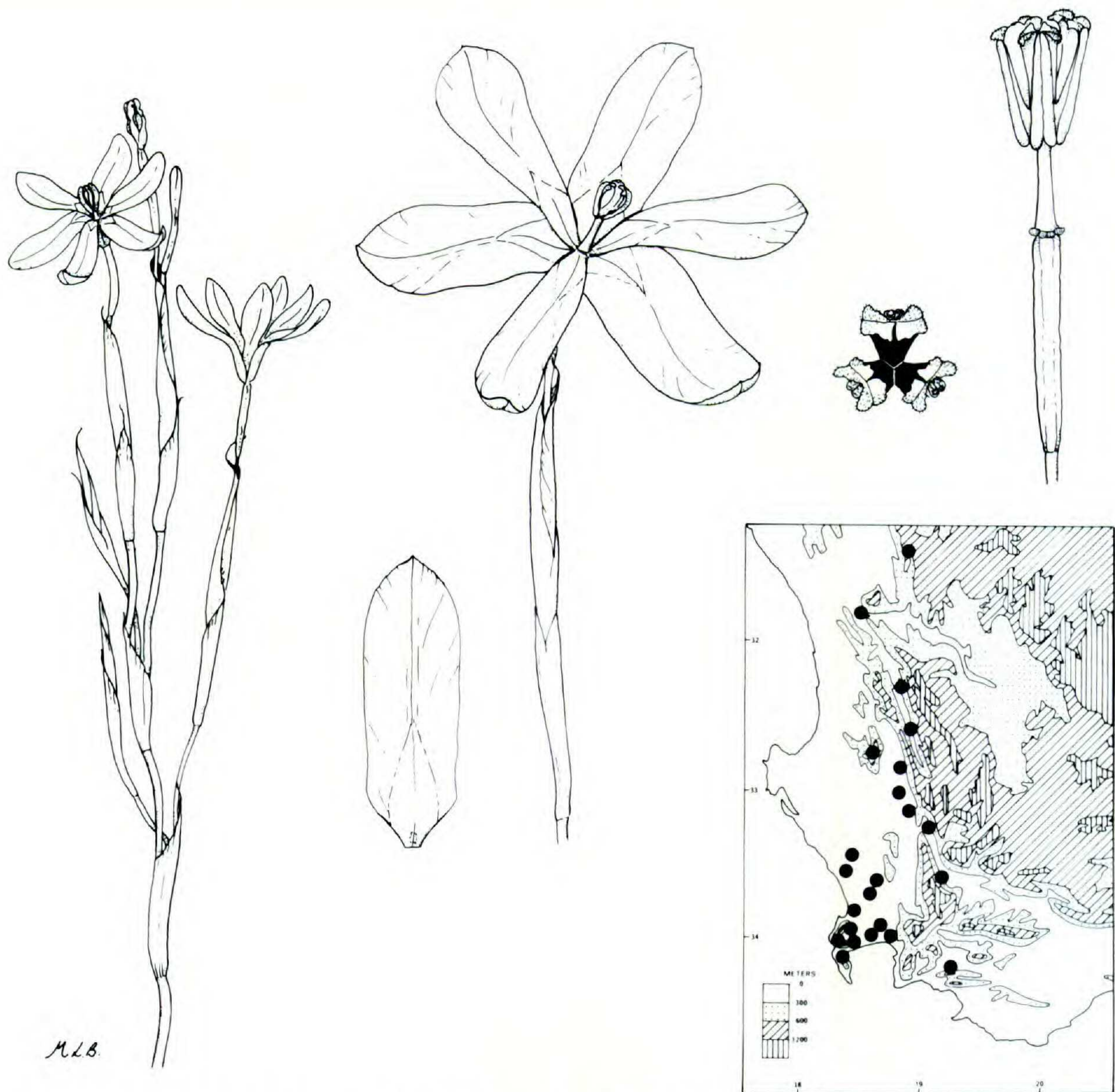


FIGURE 16. Morphology and distribution of *Homeria flaccida*. Flowering branch ca. $\times 0.4$; flower and outer tepal $\times 1$; ovary, stamens and style branches $\times 1.5$, the top view $\times 2.5$.

Plants large, 30–60 cm tall. *Corms* ca. 2 cm in diameter. *Leaf* solitary, inserted above ground level, often well above the ground, canaliculate, exceeding the stem, 9–13 mm wide. *Stem* erect, somewhat flexed above the leaf sheath and above the stem bracts, several branched, the branches flexed outwards above the bracts, the stem bracts 3.5–6 cm long. *Spathes* 5.5–8 cm long, the outer half to two-thirds the inner. *Flowers* salmon orange or yellow, with deep yellow nectar guide and tepal cup, the claw of the tepals forming a 20 mm wide cup, ca. 12 mm deep, including the filaments and part of the anthers; *outer tepals* 35–40 mm long, the claw to 14 mm long, smooth or minutely papillate in the lower part, the limb flaccid, more or less spreading, oblong or slightly wider in the upper third, 13–20 mm wide. *Filaments* united, 7–8 mm long, the column smooth to sparsely papillate-pubescent in the lower half, widest at the base, tapering slightly to the apex; *anthers* 8–11 mm long, contiguous for 3 mm, then slightly diverging. *Ovary* 17–20 mm long; *style* dividing about 3 mm above the anther base; *branches* slightly diverging, to 7 mm long, the stigma bilobed, curved upward above the apex of

the anthers; crests ca. 1 mm long, erect, triangular. *Capsule* 25–55 mm long, cylindrical, tapering near the apex, with a distinct beak ca. 2 mm long. *Chromosome number* $2n = 24, 36$.

Flowering time: late August–October.

Distribution: Caledon district, and from the Peninsula north to Klawer; usually in low lying areas seasonally waterlogged, mainly in sandy soils; Fig. 16.

Homeria flaccida is often confused with *H. collina*, and was until recently (Goldblatt, 1973) regarded only as a variety of that species (Lewis, 1950). *Homeria flaccida* is, in fact, quite distinct and far more widespread and more common than the related *H. collina*. It can be readily distinguished when living by the shape of the flowers, as well as by its robust appearance, many branches, and distinctive habitat and flowering time. In *H. flaccida* the claws of the tepals spread outward and slightly upward, forming a wide, shallow cup and including the filaments. *Homeria collina*, by contrast, is a shorter, few-branched species with suberect tepal claws, which form a narrow cup enclosing the filaments and anthers. When dried, the shape of the flower of *H. flaccida* is lost, but its large size makes identification fairly easy. The tepals, ovary, filaments, anthers, and capsule are amongst the largest in the genus. The outer tepals are usually 35–40 mm long, and the filaments are ca. 8 mm long with the longer anthers up to 11 mm. The ovary, initially 17–20 mm long, elongates after fertilization and may reach a length of 55 mm in the mature capsule, which itself is distinctive in having a pointed beak some 2 mm long. By contrast, tepals of *H. collina* seldom exceed 35 mm, the filaments are 6–7 mm long, and the anthers are slightly shorter being 5–6 mm in length. The ovary in *H. collina* is often as long as that of *H. flaccida* and the capsule may attain a length of over 35 mm. The capsule of *H. collina*, however, has a shorter, rather obtuse beak about 1 mm long.

Homeria flaccida is generally found in low-lying, sandy areas water logged in winter, and it flowers rather late in the season, by which time *H. collina* is usually in fruit. Flowering of the two species may overlap briefly, and natural hybrids have been recorded between the two species (Goldblatt, 1973) on the Cape Peninsula. *Homeria flaccida* is a polyploid species, either hexaploid, $2n = 36$ in the southern part of its range on the Peninsula, in the sandveld to the north and in an outlying population near Klawer, or tetraploid, $2n = 24$, on the eastern Cape Flats and further north along the Berg River south of Porterville. *Homeria collina*, which occurs in a more limited area of the southern Cape Flats and Peninsula and mountain valleys to the east, is consistently tetraploid. The hybrids between the two species were pentaploid, $2n = 30$, and completely sterile.

Homeria flaccida was long considered conspecific with a species originally described as *Sisyrinchium aurantiacum* by Zuccagni in 1809. This idea was first expressed by Sweet who made the combination *H. aurantiaca* (Zucc.) Sweet in 1830, only four years after he had described *H. flaccida*, which he then reduced to synonymy. According to Stafleu (1967), Zuccagni's herbarium in Florence, where presumably the type of *S. aurantiacum* was kept, was so damaged by insects that it was discarded by Parlatore after 1842. The description alone of *S. aurantiacum* is not sufficient for identification of the species, though it seems likely that it belongs to *Homeria*. The leaf is described as radical "folio radicali

canaliculato," while the produced leaf of *H. flaccida* is inserted on the stem well above ground level. In comparing *S. aurantiacum* with *H. collina* Zuccagni mentions it differed from the latter in its "corolla maculata" which adds further to the problem of identifying the species. *Sisyrinchium aurantiacum* seems best rejected on the grounds that it cannot be satisfactorily identified.

SOUTH AFRICA. CAPE: 31.18 (Van Rhynsdorp): 4 km N of Klawer (DA), *Goldblatt 3932* (K, MC, NBG, PRE, S, WAG).

31.19 (Calvinia): Glenridge, Nieuwoudtville (AC), *Thompson 2901* (STE).

32.18 (Clanwilliam): Modderfontein, Clanwilliam (BB), *Gillett 3678* (BOL, STE). Antonies R., Piketberg (DA), *Barker 2600* (NBG).

32.19 (Wuppertal): Near Citrusdal (CA), *Salter 3866* (BOL); *Story 2986* (PRE).

33.18 (Cape Town): Mamre hills (AD), *Barker 1764* (NBG). Mud River, near Ganzekraal, *Goldblatt 308* (BOL). Platteklip, Darling, *Liebenberg 8264* (PRE). Porterville flats (BB), *Loubser 973* (NBG); Twenty Four Rivers-Gouda, *Goldblatt 3924* (BR, MO, PRE). Near Mamre (CB), *L. Bolus s.n.* (BOL-31559). Near Cape Town (CD), *MacOwan s.n.* (Herb. Norm. Austr. Afr. 252) (BOL, K). Liesbeek R., *Zeyher 5014* (SAM). Camp Ground, *Zeyher 4145* (SAM). Rondebosch Common, *Goldblatt 597* (BOL, MO). Milnerton, *Cassidy 253* (NBG). Milnerton dunes, *Compton 16313* (NBG). Kalabaskraal (DA), *Werdemann & Oberdieck 301* (B, K, PRE). Klipheuvel-Durbanville (DC), *Goldblatt 4123* (MO, WAG). Durbanville, *Barker 2061* (NBG). Stellenbosch-Faure (DD), *Goldblatt 4099* (MO). Lynedoch Station, *Goldblatt 4416* (MO, PRE, WAG). Stellenbosch flats, *Garside 67, 1514* (K).

33.19 (Worcester): Tulbagh, roadside (AC), *Hutchinson 362* (GRA, K, PRE). Slanghoek valley (CA), *Barker 9469* (NBG). Bothas Halt, *van Breda 619* (PRE).

34.18 (Simonstown): Theefontein (AB), *Barker 3882* (NBG). Above Smitswinkel Bay, *Barker s.n.* (BOL-31556). Valley Road, Hout Bay, *Goldblatt 4974* (MO). Diep River, *Marloth 7232* (PRE). Bergvliet Farm, werf, *Purcell s.n.* (MO, SAM-93355,6). Somerset Strand (BB), *Page s.n.* (BOL-16230, -16231). Cultivated land, Somerset West, *Theron s.n.* (K).

14. *Homeria autumnalis* Goldbl., sp. nov. TYPE: South Africa, Cape, Elands Kloof, 23 km E of Citrusdal, *Goldblatt 5504* (MO, holotype; BR, C, K, NBG, NSW, P, PRE, S, STE, US, WAG, isotypes).—FIG. 17.

Planta 16–30 cm alta. Cormus ca. 20 mm in diametro, tunicis fibris nigris, crassis. Folium unicum, basale, apicis crassis. Caulis simplex vel aliquot ramosus. Spathae 4.5–7 cm longae, interior longitudine circa duplo longior exteriore. Flores flavi, unguis tepalorum tubiformes; tepala exteriora 32–40 mm longa. Filamenta connata, 7–9 mm longa, glabra, inclusa; antherae 5–7 mm longae, divergentes. Ovarium 8–9 mm longum, rami styli ca. 3 mm longi, antheras breviores, cristae 2 mm longae.

Plants 16–30 cm high. *Corms* ca. 20 mm in diameter, the tunics of thick black fibers. *Leaf* solitary, basal, ensiform-linear, flat to somewhat canaliculate, sheathing the base of the stem, barely exceeding to slightly shorter than the stem, with a prominent thickened, flat apical part. *Stem* erect, often flexed below the nodes, simple or 2–several branched, the stem bracts 3.5–6 cm long. *Spathes* herbaceous or becoming dry above, 4.5–7 cm long, the inner about twice as long as the outer, the apices tapering, light brown. *Flowers* bright yellow, the nectar guide a slightly darker area above the knee of the outer tepals, the tepal claws erect, forming a narrow tube around the filament column and curving outwards gradually at the anther base, partly enclosing the anthers; *outer tepals* 32–40 mm long, the claw poorly differentiated, ca. 10 mm long, the limb horizontal, to 15 mm at the widest point; *inner tepals* 30–35 mm long, 8–12 mm at the widest point. *Filaments* united, the column 7–9 mm long, cylindric, smooth; *anthers* diverging, 5–7 mm long, exceeding the stigma lobes and curving inward above. *Ovary* 8–9 mm long, exerted from the spathes; *style* dividing ca. 2 mm above the anther base, ca. 3



FIGURE 17. Morphology and distribution of *Homeria autumnalis*. Habit and corm $\times 0.5$; flower $\times 1$; ovary, stamens and style branches $\times 2$.

mm long; crests 2 mm long, triangular. *Capsule* well exerted, oblong, 8–15 mm long. *Chromosome number* $2n = 12$.

Flowering time: April–early June.

Distribution: known only from Elands Kloof, east of Citrusdal; sandy soil; apparently flowering well only in the years immediately following a fire; Fig. 17.

Homeria autumnalis is unusual in the genus in its early flowering time, April to June, i.e., autumn and early winter. In this it is similar to *H. galpinii*, a species occurring to the south, which typically blooms from May to July, although it is recorded as flowering as early as March and as late as November. Morphologically these two species are also very alike, having similar yellow flowers, thick black corm tunic fibers, and rather short leaves with prominent thickened apices. They differ in one important feature: *H. autumnalis* has a basally inserted, fairly broad, flat leaf, while in *H. galpinii* the leaf is inserted well above the ground and is narrow and channeled. Close examination of the floral structure reveals further differences. The tepals of *H. galpinii* are slightly shorter, generally the outer tepals are 28–33 mm long compared to 32–40 mm in *H. autumnalis*. The filament column of *H. galpinii* is short, 4–5 mm long and conspicuously papillate-pubescent, and both the anthers and filament column are included in the tepal tube whereas in *H. autumnalis* the filament column is 7–9 mm long and smooth, and the anthers are partly exerted from the tube. Similarities between the two species, however, clearly indicate that they are closely related.

The species has apparently been collected only twice, first by C. L. Leipoldt in 1932 and in 1980 by myself. Both collections are from essentially the same locality in Elands Kloof, east of Citrusdal.

SOUTH AFRICA. CAPE: 32.19 (Wuppertal): 22–23 km E of Citrusdal, in Elandskloof (CA), *Goldblatt 5504* (BR, C, K, MO, NBG, NSW, P, PRE, S, STE, US, WAG). Elands Kloof, 13–15 mi from Citrusdal, *Leipoldt s.n.* (BOL-20475).

15. *Homeria galpinii* L. Bolus, Fl. Pl. South Africa tab. 417. 1931. TYPE: South Africa, Cape, Klein Drakenstein Mts., above Salem, *Galpin 10600* (BOL-19420, holotype; K, isotype).—FIG. 18.

Plants medium, 15–30 cm tall. *Corms* 15–25 mm in diameter. *Leaf* solitary, inserted well above ground, channeled, to 10 mm wide, unusually short, 10–20 cm long, not or only shortly exceeding the stem, usually rigid with a prominent pungent apical portion. *Stem* erect, usually flexed above the leaf insertion, simple or few branched, the branches flexed, the stem bracts 4–5 cm. *Spathes* 4–5(–6) cm long, the outer about half the inner. *Flowers* pale yellow, the tepals forming a narrow cup below, 3–4 mm wide, enclosing the stamens and style and spread horizontally above; *outer tepals* 28–33 mm long, the claw 9–10 mm, erect, the limb ovate-oblong, 9–12 mm wide; *inner tepals* obovate, slightly smaller. *Filaments* united, the column 4–5 mm long, puberulous, broadest at the base, tapering upward; *anthers* 5–6(–8) mm long, diverging slightly from the base. *Ovary* 6–10 mm long; *style* dividing ca. 1 mm above the anther base; *branches* about as long as the anthers or slightly shorter, the stigma arching over the anther apex; *crests* erect-incurved, to 1 mm long. *Capsule* 12–15(–20) mm long, ellipsoid. *Chromosome number* $2n = 12, 24$.

Flowering time: late March–early August (also November).

Distribution: southern Cape near Elim, through the Hottentots Holland Moun-



FIGURE 18. Morphology and distribution of *Homeria galpinii*. Habit $\times 0.3$; corm, flower and outer tepal $\times 1$; ovary, stamens and style branches $\times 1.5$.

tains to Bains Kloof, with outlying populations on the Piketberg; on sandy soils; blooming only after fires; Fig. 18.

Homeria galpinii is a distinctive species, unusual in its normally very early flowering, from March to June, though it has once been collected in bloom in November. It grows on the poor sandy soils characteristic of the Cape mountains and blooms only in the season following a fire. *Homeria galpinii* is probably closely related to the morphologically similar *H. autumnalis*, also an early blooming species, but the two can easily be distinguished by their leaf insertion, *H. galpinii* having its leaf set well above the ground and *H. autumnalis* having a basal leaf. It also appears to be related to the southwestern Cape *H. collina*, but confusion with this species is unlikely as *H. collina* has a long trailing leaf in contrast to the very short, apically thickened leaf of *H. galpinii* which seldom exceeds the branches.

The species has a strongly southwestern distribution, and extends east only

as far as Pearly Beach, and north to Bains Kloof, with outlying populations in the Piketberg area, *Pillans* 7435, 7485, representing an unusual longer-leaved form which nevertheless appears to belong to *H. galpinii*. Both tetraploid and diploid populations have been discovered. Tetraploids grow in the Houw Hoek-Kleinmond area and diploids at Hermanus.

SOUTH AFRICA. CAPE: 32.18 (Clanwilliam): Top of Piketberg Mt. (CC), *Pillans* 7485 (K). Hills NW of Moutons Vlei, *Pillans* 7435 (BOL).

33.18 (Cape Town): S slopes of Jonkershoek Twins (DD), *Wasserfall* 19 (NBG).

33.19 (Worcester): Near Paradise, Bains Kloof (CA), *Heatley s.n. sub Moss* 5991 (J). Bains Kloof, *Galpin* 12662 (PRE). Klein Drakenstein Mts. (CC), *Galpin* 10600 (BOL, K, PRE), 11066 (K, PRE). Mia's Poort, du Toits Kloof Mts., *Esterhuysen* 34329 (K, MO, PRE, S, WAG).

34.18 (Simonstown): Kogelberg State Forest (BB), *Durand* 180, 193 (STE); Bettys Bay, after fire (BD), *Rycroft* 2266 (NBG, STE); *Vogts* 35 (K, PRE); *Boucher* 694 (PRE, STE). Bettys Bay-Palmiet R., *Loubser* 2156 (BOL).

34.19 (Caledon): Houw Hoek (AA), *Schlechter* 7785 (E, G, GRA, K, MO, P, PRE, S, US, Z); *Guthrie* 2315 (NBG). foot of Houw Hoek Pass, *Goldblatt* 1751 (MO, PRE, WAG), 3682 (MO, NBG, PRE, S, WAG). 2 km NE of Kleinmond (AC), *Goldblatt* 3688 (MO). Fernkloof, Hermanus, *Goldblatt* 5176 (MO). Pearly Beach (DA), *Oliver* 4875A (MO, STE).

16. *Homeria collina* (Thunb.) Salisb., Trans. Hort. Soc. London 1: 307. 1812. Baker, Fl. Cap. 6: 28, 1896.—FIG. 19.

Moraea collina Thunb., Diss. *Moraea* 11. 1787. TYPE: South Africa, Cape, hills around Cape Town, *Thunberg s.n.* (Herb. Thunb. 1209, UPS, lectotype).

Sisyrinchium collinum (Thunb.) Cav., Diss. 6: 346. 1788.

Homeria breyniana (L.) Lewis sensu Lewis, J. S. African Bot. 7: 59. 1941. (Based upon *Tulipa breyniana* L., the type of which, an illustration, is not in my opinion identifiable to species (Goldblatt, 1973).)

Plants medium, 18–35 cm tall. *Corms* 12–18 mm in diameter. *Leaf* solitary, inserted well above ground, canaliculate, 4–10 mm wide, exceeding the stem, usually trailing above. *Stem* erect, flexed above the leaf insertion, simple, or few branched, the stem and branches flexed above the bracts, the stem bracts 2–4 cm long. *Spathes* 5–8 cm long, the outer about half the inner. *Flowers* pale yellow or salmon pink, with or without a deep yellow nectar guide edged in green, the tepals forming a cup below, ca. 12 mm deep, enclosing the filaments and anthers, ca. 10 mm wide; *outer tepals* (25–)30–35 mm long, the claw 12–15 mm long, often papillate near the base, the limb spreading horizontally, 10–12 mm wide, obovate; *inner tepals* to 30 mm long, ca. 10 mm wide. *Filaments* united, the column cylindrical, 6–7 mm long, lightly pubescent in the lower half; *anthers* 5–6 mm long, contiguous in the lower half, slightly diverging above. *Ovary* (10–)14–19 mm long; *style* branching shortly above the base of the anthers; *branches* (5–)6 mm long, diverging slightly and reaching the anther apex, the stigma arched over the anther tips; *crests* short, ca. 1 mm long, erect-incurved. *Capsule* cylindrical (21–)30–40 mm long with a short obtuse beak ca. 1 mm long. *Chromosome number* $2n = 24$.

Flowering time: late June–early September.

Distribution: restricted in range, extending from the Cape Peninsula east to Bot River, and north to Wellington and Bains Kloof; usually in sandy soil; Fig. 19.

Homeria collina is a common, winter- and early-spring-flowering species on

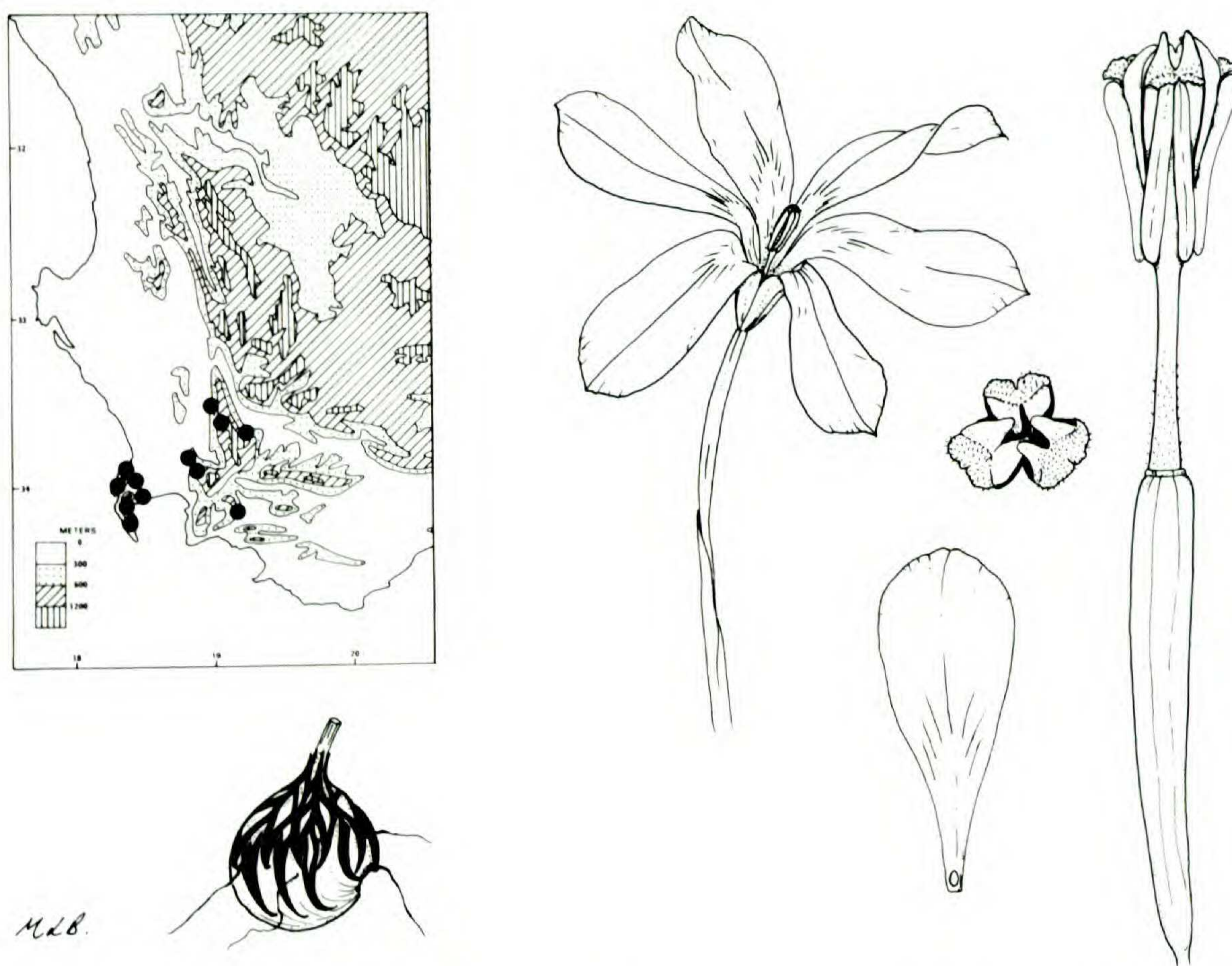


FIGURE 19. Morphology and distribution of *Homeria collina*. Corm, flower and outer tepal $\times 1$; ovary, stamens and style branches $\times 3$.

the Cape Peninsula. Its distribution north and east is rather limited, and it occurs on slopes and in valleys of the Hottentots Holland-Groot Drakenstein-Du Toits Mountains axis. All populations so far examined are tetraploid.

When pressed, it is often difficult to distinguish from several closely related species, including *H. flaccida*, *H. minor* and *H. ochroleuca*, as details of the tepal cup and orientation of the style arms are usually lost. Quantitative characters are fairly reliable and must then be used. *Homeria collina* itself, has a rather narrow tepal cup, which includes the whole stamen and style apparatus, and typically a long ovary and very long capsule, up to 4 cm long. It can be distinguished from the related *H. minor* by floral characteristics; the latter has anthers 3–5 mm long, style branches which divide 2–3 mm above the anther base, an ovary ca. 10 mm long, and a capsule 18–28 mm long. Features of *H. collina* are all slightly larger, though some overlapping occurs. It is equally difficult to distinguish *H. flaccida* when dry, since the shallow, open cup of this species is obscured by pressing. *Homeria flaccida* is somewhat larger in critical floral characters than *H. collina*; thus it has a filament column 7–8 mm long, anthers 8–11 mm long, an ovary 17–20 mm long, and a capsule usually 30–40 mm long. It is also usually taller and more robust than *H. collina*, often has darker pink flowers (though there are also yellow forms), and the capsules have a very characteristic, relatively long acute beak. When these features are present in dried material misidentification should be avoided.

Natural hybrids between *H. collina* and *H. flaccida* have been recorded (Goldblatt, 1973) from the Cape Peninsula. Because *H. flaccida* is hexaploid in this area and *H. collina* tetraploid, the resulting pentaploid, $2n = 30$ hybrid is sterile.

The name *Homeria breyniana* was applied to this species by Lewis (1941) who believed that Linnaeus's *Tulipa breyniana* was an earlier name. I have restored the use of *H. collina* for the species (Goldblatt, 1973) as I am sure the type of *T. breyniana*, an illustration, is not identifiable to species although it is clearly a *Homeria*. The plant illustrated by the artist has wilted flowers which have been shown with the ovary of a tulip. *Tulipa breyniana* could equally be one of two or three other species of *Homeria*, e.g., *H. ochroleuca* or *H. comptonii*.

The combination *Homeria collina* is usually attributed to Ventenat, who described the genus in 1808. This is incorrect (Milne-Redhead, 1937). The combination was actually made by Salisbury in 1812, the first author to adopt Ventenat's genus.

SOUTH AFRICA. CAPE: 33.18 (Cape Town): Near Cape Town (CD), *Thunberg s.n.* (Herb. Thunberg 1209, UPS); *MacOwan s.n.* (Herb. Norm. Austr. Afr. 252) (G, SAM). Table Mt., *Thode 8532* (STE); *Schlechter 1032* (GRA, Z). Groot Schuur, *Wolley Dod 593* (BOL). Wynberg Hill, *Pillans 10164* (MO). E slopes of Devils Peak, *Pillans 10424* (MO). Camps Bay, *Cassidy 290* (NBG). Clifton, *Goldblatt 4800* (MO, WAG). Sea Point, *Smith 2902* (PRE). Paarl Mountain (DB), *Kruger M36* (PRE). Stellenbosch flats (DD), *Garside 264* (K); *Bos 320* (PRE, STE). Jonkershoek Valley, *Bos 196* (WAG).

33.19 (Worcester): Bains Kloof, top of pass (CA), *Martin 2077/36* (NBG). Worcester end of Du Toits Kloof, *Barker 8026* (NBG); *Goldblatt 4701* (MO). Bo-Hermon-Wellington, *Goldblatt 3988* (BR, MO, PRE, WAG).

34.18 (Simonstown): Klaassenbosch (AB), *Zeyher 4125* (SAM). Kogelfontein, *Salter 8441* (SAM). Chapmans Peak lookout, *Goldblatt 500* (BOL). Above Ocean View, Kommetjie, *Goldblatt 4123A* (K, MO, PRE, WAG). Hout Bay, *White 5090* (PRE). Kalk Bay, along Boyes Drive, *Goldblatt 2132* (MO, NBG, PRE, WAG). Bergvliet Farm, *Purcell s.n.* (SAM, STE). Ladies Mile, Bergvliet, *Purcell s.n.* (MO, SAM-93364); Valley road, Hout Bay, *Goldblatt 4970* (MO).

34.19 (Caledon): foot of Houw Hoek Pass (AA), *Goldblatt 4004* (MO).

Unknown locality: Swartland, *Zeyher s.n.* (SAM 20639).

17. *Homeria minor* (Ecklon) Goldbl., comb. nov.—FIG. 20.

Moraea minor Ecklon, Topogr. Verz. Pflanzensamml. Ecklon 15. 1827. TYPE: South Africa, Cape, sandy places in vineyards on the eastern slopes of Table Mt., *Ecklon Irid 7* (S, lectotype).

Vieusseuxia curvata Ecklon, Topogr. Verz. Pflanzensamml. Ecklon 15. 1827. TYPE: South Africa, Cape, vineyards at Witteboom, *Ecklon s.n.* (S, lectotype).

Homeria rhopalocarpa Schltr., Bot. Jahrb. Syst. 27: 95. 1900. TYPE: South Africa, Cape, Windhoek, sandy soils, Vanrhynsdorp dist., *Schlechter 8336* (B, lectotype; BOL, C, E, G, GRA, K, M, MO, P, PRE, S, US, isolectotypes).

H. framesii L. Bolus, J. Bot. 69: 259. 1931. TYPE: South Africa, Cape, near Moorreesburg, *Ross Frames s.n.* (BOL-19147, lectotype; K, PRE, isolectotypes).

Plants 10–20(–30) cm high. *Corms* ca. 10 mm in diameter. *Leaf* inserted well above ground level, linear, channeled, exceeding the stem, 4–8 mm wide. *Stem* flexed above the leaf insertion and nodes, the main axis with only two internodes above the leaf, the lowermost node bearing a stem bract, sometimes with a short lamina, and leaflike, often 1–3 branched. *Spathes* initially ca. 5 cm long with the outer about two-thirds the inner, but the inner usually much elongating and enclosing the developing capsules, often reaching 7–8 cm. *Flowers* usually dark pink with a yellow nectar guide outlined in green, occasionally yellow, the tepals forming a narrow cup including the stamens and style branches, the upper part

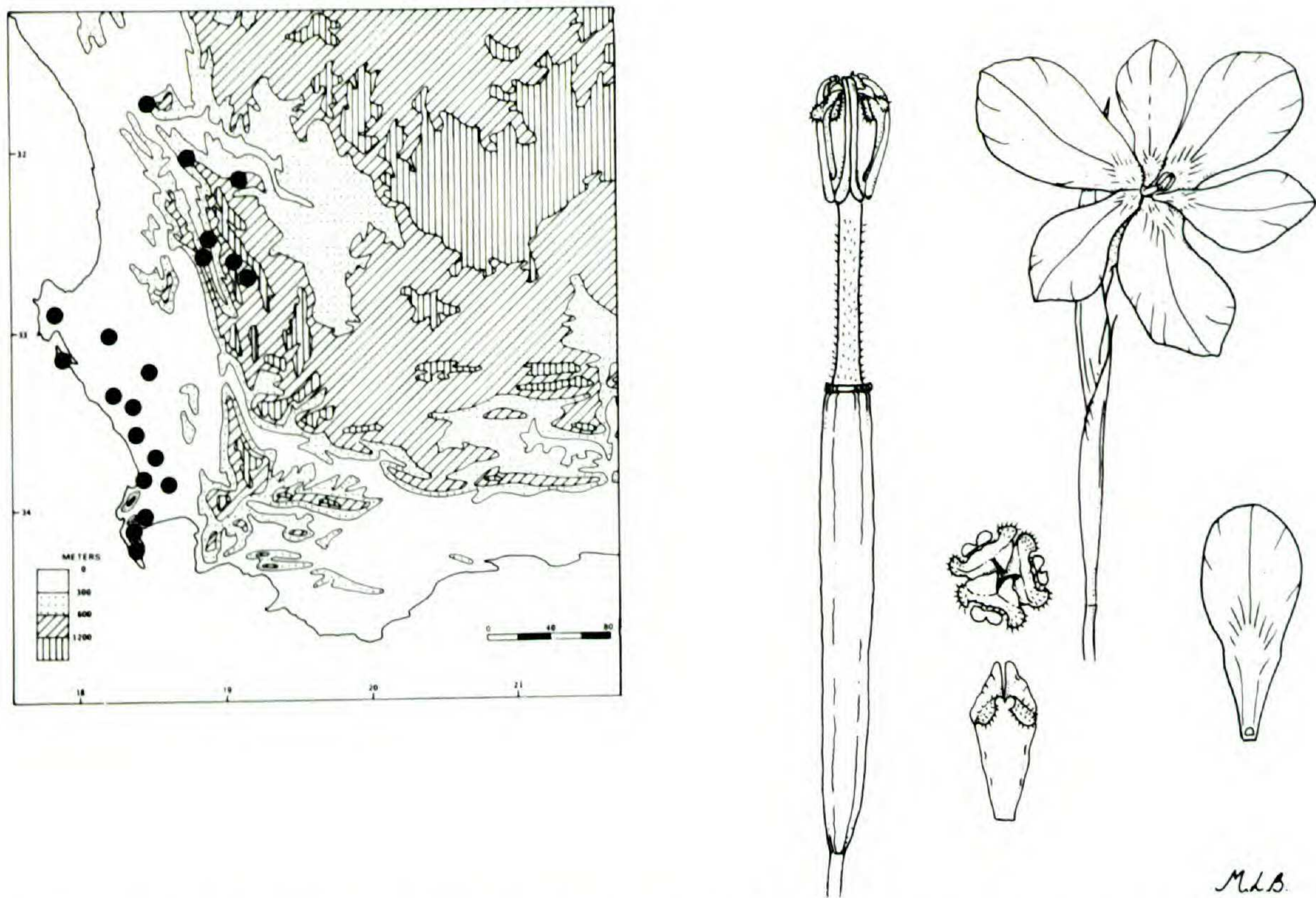


FIGURE 20. Floral morphology and distribution of *Homeria minor*. Flower and outer tepal $\times 1$; ovary, stamens and style branches $\times 3$; top view and single style branch $\times 5$.

of the anthers sometimes exserted; *outer tepals* 21–37 mm long, the claw 10 mm long, suberect, the limb horizontal, 9–16 mm wide, obovate; inner tepals 20–36 mm long, 8–14 mm wide, often twisted. *Filaments* united, the column 6–9 mm, cylindrical, minutely pubescent in the lower half; *anthers* erect 3–5(–6) mm long, diverging in the upper half. *Ovary* 9–15 mm long, enclosed in the spathes; *style* branching towards the midline of the anthers; *branches* erect, barely diverging, 2–3 mm long, usually reaching the apex of the anthers, sometimes shorter, the stigma curved over the anther apex, with short, erect crestlike appendages less than 1 mm long. *Capsule* cylindrical, 25–28 mm long, without a beak, enclosed in spathes in younger stages. *Chromosome number* $2n = 12$.

Flowering time: mid August–September.

Distribution: west coast from the Cape Peninsula north into the Olifants River valley and extending locally into Elands Kloof; sandy soils; Fig. 20.

Homeria minor, better known by the later synonym *H. framesii*, is a relatively common species of the sandveld area between Cape Town and Saldanha Bay. It has not previously been realized that its distribution is considerably wider. It occurs on the Cape Peninsula, where it is usually confused with *H. collina*, and north along the west coast and in the Olifants River valley, where the type collection of *H. rhopalocarpa*, another synonym, was made.

The species is diploid, $2n = 12$, unlike the related *H. collina*, $2n = 24$, and is autogamous. The flowers are fugaceous, opening in the late morning and fading in mid afternoon of the same day. It is related both to *H. collina* and to *H. longistyla*. On the Cape Peninsula, where both *H. collina* and *H. minor* occur,

the species are separated by a difference in flowering times, although they are often sympatric and have similar soil preferences. *Homeria minor* flowers in late August and September here, while *H. collina* blooms from June onwards and is usually in seed by August.

Homeria minor can be distinguished from *H. collina* in fruit, but less easily in flower. It is usually a shorter plant, with a short ovary, long filaments, 6–9 mm, and anthers 3–5 mm long. The capsules are usually 20–25 mm, rarely to 28 mm long, and have no beak. *Homeria collina*, in contrast, has filaments 6–7 mm long, anthers 5–6 mm long, an ovary 14–19 mm long, and the beaked capsules are usually over 30 mm long. *Homeria minor* is closely allied to *H. longistyla* which occurs east of the range of *H. minor* and usually on clay or rocky ground. The differences between these two species are discussed under *H. longistyla*.

SOUTH AFRICA. CAPE: 31.18 (Vanrhynsdorp): Windhoek (DC), *Schlechter 8336* (B, BOL, C, E, G, GRA, K, M, MO, P, PRE, S, US). Nardouwsberg, at top of pass, *Goldblatt 2190* (M, MO, PRE), 3856 (MO, PRE).

32.17 (Vredenburg): slopes N of Vredenburg (DD), *Hutchinson 234* (K).

32.18 (Clanwilliam): Greys Pass (DB), *Steyn 632* (NBG). Olifants R. valley near Citrusdal turnoff, *Goldblatt 3239* (C, MO, PRE, WAG). 5 mi N of Citrusdal, *Leighton 1094* (BOL); *Lewis 1633* (SAM).

32.19 (Wuppertal): 4 km E of Klipfonteinrand (AA), *Nordenstam & Lundgren 1113* (MO, S). Elands Kloof (CA), *Lewis s.n.* (BOL as Nat. Bot. Gard. 2023-36).

33.18 (Cape Town): Donkergat Peninsula, foot of Postberg (AA), *Goldblatt 4085A* (K, MO). Koperfontein-Hopefield (AB), *Lewis 3565* (SAM). Near Hopefield, *Bachmann 1180* (M). Mamre-Darling (AD), *Davis s.n.* (SAM-60189). Mamre-Ysterfontein, *L. Bolus s.n.* (BOL-31567). Mamre hills, *Barker 4605* (NBG). Moorreesburg (BA), *Ross Frames s.n.* (BOL-19147, K, PRE). Near Mamre (CB), *Esterhuysen s.n.* (NBG). Cape Town-Mamre, milestone 32, *Esterhuysen 2938* (BOL). Mamre, *Lewis 99* (SAM). Koeberg (DA), *Goldblatt 3823* (MO, WAG). Killarney Industrial Park, Cape Town (DC), *Goldblatt 4830* (MO). Flats near Bellville, *Wall s.n.* (LD).

34.18 (Simonstown): Red Hill (AB), *Wolley Dod 3010* (BOL, K). Klein Slangkop, *Wolley Dod 3304* (K). Simons Bay, *Wright 272* (GH, K). Kalk Bay Mt., above Boyes Drive, *Goldblatt 4098* (MO, NBG, PRE, WAG). Near Ocean View, Kommetje, *Goldblatt 4124* (MO). Imhofs Gift, *Kies s.n.* (NBG-59090). Vineyards near Witteboom, *Ecklon s.n.* (S). Bergvliet farm, *Purcell s.n.* (SAM).

18. *Homeria longistyla* Goldbl., sp. nov. TYPE: South Africa, Cape, near bridge over Riversonderend, E of Villiersdorp-Elgin road, *Goldblatt 4881* (MO, holotype; K, NBG, PRE, S, WAG, isotypes).—FIG. 21.

Planta 15–30 cm alta. Cormus 8–14 mm in diametro. Folium solitarium, supra terram insertum. Caulis flexuosus, aliquot ramosus, raro simplex. Spathae (3.5–)4–6 cm longae, exterior dimidia interior. Flores lutei vel subrosei, unguis tepalorum tubiformes, stamina inclusa; tepala exteriora 25–35 mm longa, ungue 11–15 mm, interiora parum breviora. Filamenta connata, 7–9 mm longa; antherae 4–7 mm longae, usitate contiguae. Ovarium 8–12(–15) mm longum; stylus divergens ad vel ultra apicem antherarum, rami breviores vel nulli.

Plants 15–30 cm tall. Corms 8–14 mm in diameter. Leaf solitary, inserted above ground level, linear, channeled, longer than the stem. Stem erect, flexed above the leaf insertion, usually with several branches, rarely simple, the stem bracts usually 3–5 cm long. Spathes (3.5–)4–6 cm long, the outer about half the inner. Flowers deep to pale orange-pink or pale yellow, with dark yellow nectar guides, the lower parts of tepals forming a cup 8–9 mm wide, including the filaments and anthers, the upper parts outspread, flaccid; outer tepals 25–35 mm long, the claw 11–15 mm, the limb 10–14 mm wide, more or less oblong, obtuse; inner tepals slightly shorter, narrower. Filaments united, 7–9 mm long, the column slender, cylindrical, minutely papillate-pubescent, smooth near the apex;

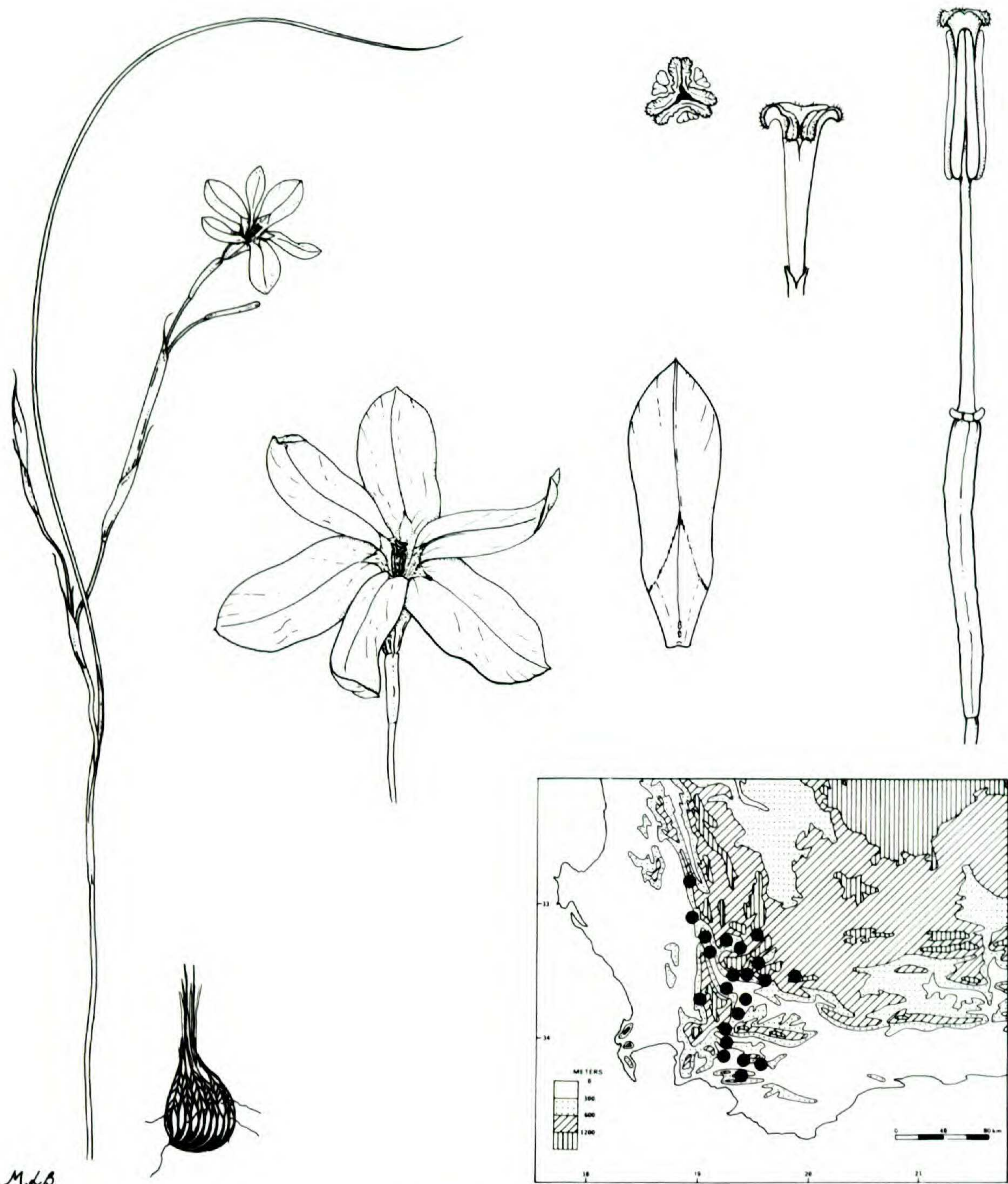


FIGURE 21. Morphology and distribution of *Homeria longistyla*. Habit $\times 0.4$; corm, flower and outer tepal $\times 1$; ovary, stamen and style branches $\times 3$.

anthers erect, 4–6(–7) mm long, contiguous or slightly diverging in the upper third. *Ovary* 8–12(–15) mm long; *style* dividing near or beyond the apex of the anthers; *branches* short, 1–2 mm long or barely developed, the apices forming a bilobed stigma; crests minute, obscure, or lacking. *Capsule* 15–20 mm long, cylindrical, with a distinct short, acute beak ca. 1 mm long; seeds angled. *Chromosome number* $2n = 12$.

Flowering time: mid August–October.

Distribution: Caledon and Worcester districts, extending north to Ceres and Tulbagh and east to Koo and Montagu; clay soils in renosterbosveld; Fig. 21.

Homeria longistyla appears to be one of the most specialized species in the genus with the branching of the style almost or entirely suppressed. The style may divide near the apex of the anthers, with very short branches being produced, 1–2 mm long, or the style may essentially be undivided, with three apical stigmatic lobes. In other respects the species much resembles *H. collina* and particularly *H. minor*, to which it seems mostly closely related. The two can be distinguished when dry only by examination of the style which in *H. minor* divides at or below the midline of the anthers, and the well-developed style branches are fairly broad and at least 3 mm long with distinct crests. Also the ovary and capsules of *H. longistyla* are usually well exerted from the spathes, while those of *H. minor* are typically enclosed, at least during development, although the ripe capsules are usually exerted.

Homeria minor and *H. longistyla* have complementary distribution ranges. *Homeria minor*, found always in sandy soils, extends from the Cape Peninsula northward along the west coast into the Olifants River valley. *Homeria longistyla*, which grows on sand, but more often on clay soils, occurs on the slopes of the Olifants River Mountains and inland in the Tulbagh, Worcester, Caledon, and Ceres districts. Although *H. minor* and *H. longistyla* seem clearly to be very closely related, it seems reasonable and useful to recognize the two as they do not appear to intergrade and can readily be distinguished by careful attention to the critical style characteristics. The morphological distinction is supported by the reproductive biology of the two species. *Homeria longistyla* is a self-incompatible species while the several populations of *H. minor* studied have proved to be autogamous.

SOUTH AFRICA. CAPE: 33.19 (Worcester): Near Saron (AA), *Schlechter* 4872 (B, BOL, C, GRA, K, M, SAM). Near Tulbagh Road Station (AC), *Goldblatt* 4757 (MO). Prince Alfreds Hamlet (AD), *Lewis* 2555 (SAM). Near Ceres, *Marloth* 6184 (PRE). Hottentots Kloof (BA), *Barker* 3019 (NBG). Lakenvlei (BC), *Barker* 1319, 1320 (NBG). Top of Swaarmoed Pass, *Goldblatt* 4413 (BOL, G, MO, PRE). Near Worcester (CB), *Leipoldt s.n.* (BOL-31598). Karoo Gardens, *Olivier* 135 (PRE). Brandvlei, *Salter* 6842 (BOL). Du Toits Kloof-Breede R., *Goldblatt* 3918 (MO), 4708 (BR, MO, WAG). Foot of Fonteinjiesberg, Onse Rug farm, *Goldblatt* 4209 (MO). Below Zebra Kloof Dam, *Goldblatt* 4733 (K, MO, S). Klein Drakenstein Mts., S. Hugenot (CC) *Salter* 4662 (BOL, K), French Hoek, Zachariashoek, *Haynes* 373 (PRE). Stettyn (CD), *Leipoldt* 3556 (BOL). Hex R. valley (DA), *Wolley Dod* 4023 (BOL, K). Rabiesberg slopes, *Lewis s.n.* (BOL-31593). Near Koo (DB), *Goldblatt* 4181 (MO). 2 mi E of Robertson (DD), *Acocks* 16108 (PRE).

33.20 (Montagu): slopes of Kloof near Baths (CC) *Page* 17 (PRE).

34.19 (Caledon): Eseljag-Queen Anne (AA), *Goldblatt* 3999 (MO). 1 km E of bridge over Riviersonderend on Bot R. road, *Goldblatt* 4881 (K, MO, NBG, PRE, S, WAG). W of Eseljag Pass, *Goldblatt* 3998 (MO), 4736 (MO, PRE). Flats S of Villiersdorp toward Theewaterkloof Dam (AB), *Goldblatt* 4012 (BR, MO, PRE, S). Boontjies Kraal, W. Caledon, *Creasy s.n.* (NBG-59206). Commonage, Caledon, on Zwartberg slopes, *Guthrie s.n.* (BOL-16921). Zwarteberg, Caledon, *Zeyher* 4074 (P, PRE, S, SAM).

19. *Homeria patens* Goldbl., sp. nov. TYPE: South Africa, Cape, Clanwilliam distr., near Boontjies River, *Leipoldt s.n.* (BOL-20768, holotype; K, SAM isotypes).—FIG. 22.

Planta 25–45 cm alta. Tunici cormi nigri. Folium solitarium, raro dua, supra terram insertum. Spathae herbaceae 4–6 cm longae. Flores lutei vel aurantiaci, tepala extensa a basem, unguibus cupulatis laxae; exteriores 25–27 mm longae, ungues ca. 9 mm. Filamenta connata, columna 7–8 mm longa, papillosa infra; antherae ca. 4 mm longae. Ovarium 9–10 mm longae; stylus divergens ad apicem columnae filamentarum, rami 3–4 mm longi, cristae breves.

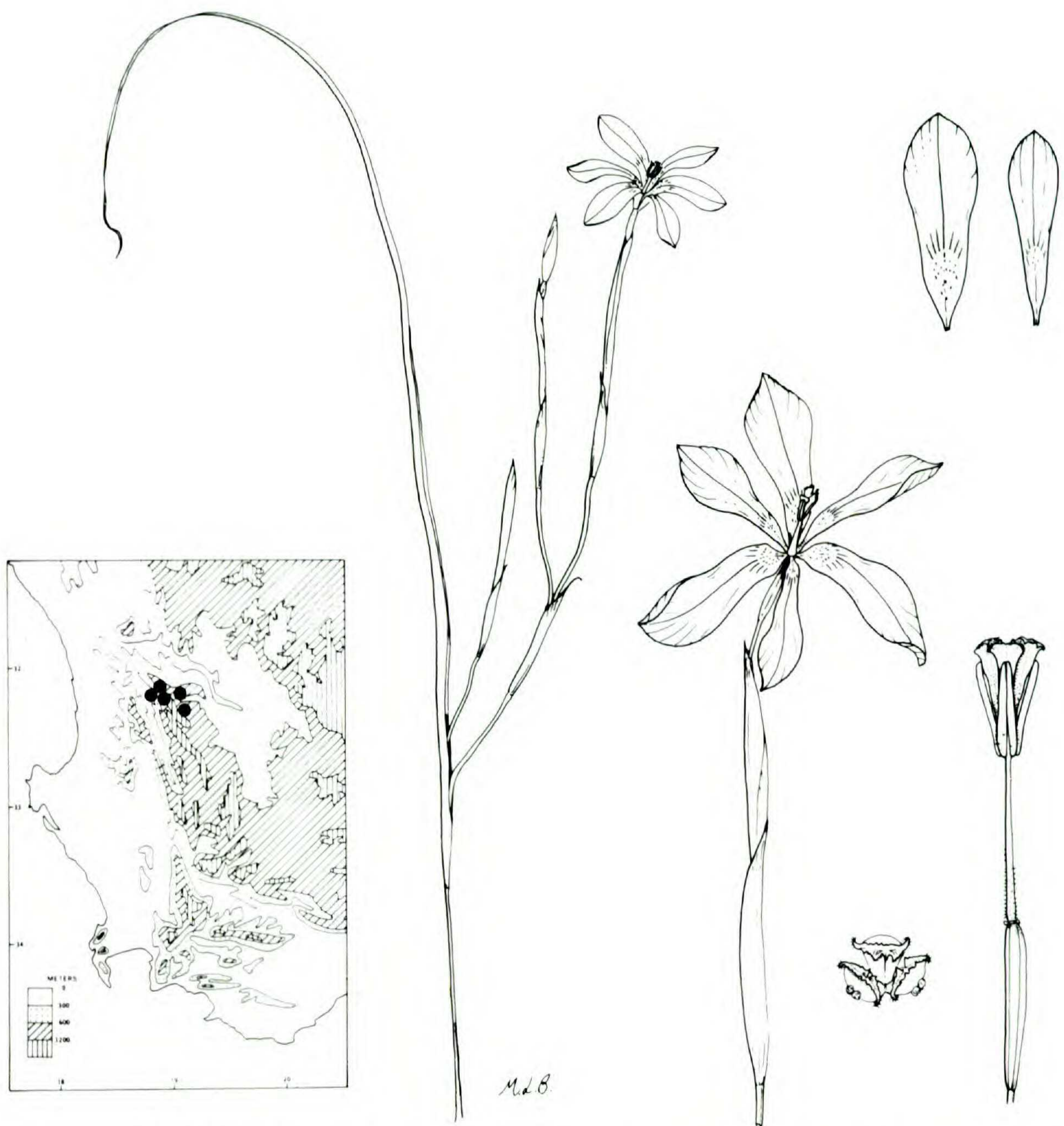


FIGURE 22. Morphology and distribution of *Homeria patens*. Habit $\times 0.5$; flower, inner and outer tepal $\times 1$; ovary, stamens and style branches $\times 2.5$, the top view $\times 5$.

Plants 25–45 cm high. *Corms* ca. 10 mm in diameter, the tunics black. *Leaf* solitary 1 (or rarely 2), linear, canaliculate, inserted well above ground, to 5 mm wide, much exceeding the stem. *Stem* erect, usually many branched, flexed above the leaf insertion, and above the stem bracts, the bracts 3–4 cm long. *Spathes* herbaceous, brown tipped, 4–6 cm long, the inner about twice as long as the outer, elongating somewhat as the capsules develop. *Flowers* bright yellow or orange, with dark yellow nectar guides, the tepals spreading from the base, the claws ascending and loosely cupped, the limbs outspread; *outer tepals* 25–27 mm long, the claw ca. 9 mm, pandurate, to 9 mm at the widest; inner tepals to 24 mm, narrower. *Filaments* united, cylindrical, 7–8 mm long, papillate in the lower half; *anthers* ca. 4 mm long, diverging from the base. *Ovary* 9–10 mm long,

exserted; style dividing at the apex of the filament column; *branches* 3–4 mm long, about as wide as the anthers and reaching or slightly exceeding the anther apex; crests erect, very short (obscure in dry material). *Capsule* usually exserted or partly included in the spathes, 12–15 mm long. *Chromosome number* $2n = 12$.

Flowering time: mid August–September.

Distribution: sandy soils in valleys of the Pakhuis and Nardouw Mts.; Fig. 22.

Homeria patens is characterized by a rather open flower. The tepal claws incline gently upward forming a very open shallow cup that includes the filament column. The tepal limbs extend laxly outward, and the diverging anthers are held well above the flower cup. The species appears to be related to the more widespread and specialized *H. minor* but the two are quite distinct in flower structure. The narrow tepal cup and completely included filaments and anthers of *H. minor* are in fact starkly different when seen in living plants. *Homeria vallisbelli*, occurring to the north in the Nieuwoudtville district, is probably also closely allied. The latter differs in its well-formed tepal cup, reduced style branches, and enclosed ovary and capsules.

The record indicates that *H. patens* is rather uncommon and restricted to a few valleys on the east and west from the Pakhuis Mountains near Clanwilliam. Further collecting here may well extend its known range.

SOUTH AFRICA. CAPE: 32.18 (Clanwilliam): 5 mi from Clanwilliam on Kranzvlei road (BB), Gillett 4021 (BOL, K, MO). Nardouw Kloof, *Stokoe s.n.* (SAM-59807). Clanwilliam, *Leipoldt 235* (SAM).

32.19 (Wuppertal): Near Boontjies R. (AA), *Leipoldt s.n.* (BOL-20768, K, SAM). Brandewyn R., *Compton 7694* (NBG); *Barker 251, 252* (NBG); *Lewis s.n.* (BOL-22260). Flats east of Pakhuis Pass, *Goldblatt s.n.* (MO), 5159 (K, MO).

20. *Homeria vallisbelli* Goldbl., sp. nov. TYPE: South Africa, Cape, Oorlogskloof, *Schlechter 10947* (K, holotype; B, BOL, M, isotypes).—FIG. 23.

Planta 15–30 cm alta. Cormus 8–15 mm in diametro. Folium unicum supra terram insertum, caulem excedens. Caulis flexuosus, simplex vel aliquot ramosus. Spathae 3.5–5(–7) cm longae, interior longitudine circa duplo longior exteriori, postea elongata et fructus includens. Flores rosei vel flavi, unguis tepalorum cupulati; tepala exteriora 26 mm longa, limbis 16–18 mm, interiora parum breviora. Filamenta connata, 7–8 mm longa; antherae ca. 4.5 mm longae, divergentes. Ovarium 9–12 mm longum, inclusum, stylus divisus inter basem et medium antherarum, rami ca. 2.5 mm, bifurcati, cristae obscurae.

Plants 15–30 cm high. *Corms* 8–15 mm in diameter, the tunics black. *Leaf* linear, channeled, exceeding the stem, inserted well above ground level, the margins inrolled. *Stem* erect, flexed above the leaf insertion and above the sheathing part of the bracts, simple to several branched, the stem bracts 2.5–5(–8) cm long, the lowest occasionally \pm leaflike. *Spathes* 3.5–5(–7) cm long, herbaceous, with brown attenuate apices, the inner initially about twice as long as the outer, later elongating to enclose the fruits. *Flowers* deep pink or pale yellow, with dark yellow nectar guides outlined in dark purple or green, the tepals forming a wide cup, ca. 8 mm deep and 10 mm wide at the apex, including the filament column, the tepal limbs spread horizontally; *outer tepals* 26 mm long, the limb 16–18 mm, obovate, widest just below the apex, the claw ca. 10 mm long, puberulous in the lower part; inner tepals slightly shorter and narrower. *Filaments* united, the column 7–8 mm long, slightly narrowed towards the apex, pubescent in the lower



FIGURE 23. Morphology and distribution of *Homeria vallisbelli*. Habit $\times 0.5$; flower and inner and outer tepal $\times 1$; ovary, stamens and style branches $\times 2$.

two-thirds; *anthers* ca. 4.5 mm long, diverging. *Ovary* 9–12 mm long, enclosed in the spathes, rarely partly exerted; *style* branching between the base and the middle of the anthers; *branches* narrow, ca. 2.5 mm long, bilobed, receptive at the tips of the lobes, reaching to near the apex of the anthers; crests obscure, shorter than the stigma lobes. *Capsule* cylindric, to 14 mm long, usually completely enclosed in the spathes. *Chromosome number* $2n = 12$.

Flowering time: (late July–)August–September.

Distribution: western part of the Calvinia district, especially common around Nieuwoudtville, and extending south with an outlying population recorded from Blinkvlei in the Doorn River basin; mainly on sandy soils, or in very rocky sites; Fig. 23.

The earliest collections I have seen of *Homeria vallisbelli* are those of Schlechter, collected in 1897 (*Schlechter 10947*, Oorlogskloof). Evidently Schlechter considered this a new species for the collection bears the name *H. tulipifera*. One of the sheets of this collection at the Berlin herbarium has the inscription "*typus auct.*" The species was however never described.

The specific epithet *vallisbelli* is derived from the name Oorlogskloof, one of the first farms in the Nieuwoudtville vicinity, and the name sometimes given in the past to the general area around Nieuwoudtville.

This species is apparently related to the more widespread *H. minor* of the Cape west coast and Olifants River valley, and the two are easily confused, especially when dried. However, *H. vallisbelli* differs in several important ways. First, the tepal cup is fairly wide and encloses only the filaments, while in *H. minor* a narrower cup encloses the anthers as well. Second, the short style branches are entirely without crests, where *H. minor* has short but clearly visible crests. Third, the ovary is usually entirely enclosed in the spathes, the inner of which elongates during fruit development, to completely enclose the capsules (which occasionally become partly exerted when ripe). In *H. minor* the ovary is often enclosed at flowering time or partly exerted, but the ripe fruits are usually exerted from the spathes. The species is diploid, but in contrast with *H. minor*, which is autogamous, plants of the single population of *H. vallisbelli* grown experimentally were self-incompatible.

SOUTH AFRICA. CAPE: 31.19 (Calvinia): Nieuwoudtville (AC), *Loubser 952* (NBG); *Marloth 7803* (PRE). Oorlogskloof hills, *Schlechter 10947* (B, BOL, GRA, M). Between Oorlogskloof and Nieuwoudtville, *Leipoldt 3852* (BOL, K, PRE). Nieuwoudtville-Van Rhyns Pass, *Lewis 1997* (SAM). Nieuwoudtville-Grasberg road, *L. Bolus s.n.* (BOL-21068, SAM); Grasberg farm, *Lavranos 10908* (MO). 3–4 mi W of Nieuwoudtville, *Lewis 2275* (PRE, SAM); *Barker 6477, 6479, 6481* (NBG). 4.4 mi S of Nieuwoudtville, *Thompson 363* (K, STE). Oorlogskloof-Papkuilsfontein, *Leipoldt 3012* (BOL), *3013* (BOL, K). Nieuwoudtville waterfall *Goldblatt 3952* (K, MO). Lokenberg (CA), *Acocks 17023* (K).

32.19 (Wuppertal): Between Blinkvlei and Doorn R. (BA), *Lewis 5822* (NBG).

21. *Homeria flavescens* Goldbl., sp. nov. TYPE: South Africa, Cape, Cedarberg, at turnoff to Krom River farm, *Goldblatt 4058a* (MO, holotype; NBG, isotype).—FIG. 24.

Planta 12–30 cm alta. Cormus 8–12 mm in diametro. Folium unicum, supra terram insertum, ad 4 mm latum. Caulis flexuosus, ramosus. Spathae 3–6 cm longae, interior circa duplo longior exteriori, postea elongata et capsulas juvenes includens. Flores pallide flavescens, unguis tepalorum cupulati, includentes columnam filamentarum; tepala exteriora 16–24 mm longa emarginata, interiora parum breviora. Filamenta connata interdum libera in parte superiore; antherae 3–4 mm longae, divergentes. Ovarium 7–12 mm longum, rami styli ca. 2 mm longi, bifurcati, quam antheris breviores.

Plants small to medium, (12–)15–30 cm high. *Corm* 8–12 cm in diameter, the tunics black. *Leaf* solitary, inserted well above ground, channeled, linear to 4 mm wide, much exceeding the inflorescence, trailing. *Stem* erect, strongly flexed above the leaf insertion, several to many branched, the bracts 3.5–5.5 cm long. *Spathes* 3–6 cm long, the inner initially about half the outer but later elongating to enclose developing fruits. *Flowers* pale yellow with deep yellow nectar guides edged in gray, the lower part of the tepals forming an open cup, 8 mm at the mouth from which only the upper part of the filament column emerges, the tepals spread horizontally above; *outer tepals* 16–24 mm long, 7–9 mm wide, emargin-



FIGURE 24. Morphology and distribution of *Homeria flavescens*. Habit and corm $\times 0.5$; flower $\times 1$; ovary, stamens and style branches $\times 2$, the detail of the style branches much enlarged.

ate, the claw 5–6 mm long, the limb oblong, or narrowed in the lower third; *inner tepals* 17–19 mm, narrower. *Filament* column ca. 5 mm long, sometimes free in the upper 0.5–2 mm, minutely papillate; *anthers* 3–4 mm long, diverging. *Ovary* 7–12 mm long, enclosed in the spathes; *style* dividing at the base of the anthers; *branches* ca. 2 mm long, flat, deeply bilobed, shorter than the anthers, the lobes stigmatic at the apices and held between the anthers. *Capsule* 8–16 mm long, oblong to cylindrical, enclosed until maturity. *Chromosome number* $2n = 9$.

Flowering time: September; flowers open in early morning and fade between 1 and 2 P.M.

Distribution: mountains of the west coast from the Southern Cedarberg to the Giftberg; in sandy soil, with dry fynbos; Fig. 24.

Homeria flavescens is a poorly known species which is apparently distributed widely in the mountains of the west coast, from the Southern Cedarberg to the Giftberg. It is rather variable as circumscribed here, and includes forms in the south (*Goldblatt 4058a*, *Goldblatt 5669*) with small flowers and somewhat larger-flowered forms in the north (*L. Bolus s.n.*). The latter specimens bear the manuscript name *H. klawerensis* L. Bol. The species is characterized by its very pale yellow flowers with emarginate outer tepals, diverging, flat style branches which are shorter than the anthers, and a wide tepal cup.

The habitat of *H. flavescens* appears to be flats and mountain slopes with sandy, and often very thin soil overlying sandstone rock. It grows in dry fynbos and flowers best in open places away from other vegetation. The places where I have seen the species had not been recently burnt.

Three populations have been examined cytologically to date, all from the southern Cedarberg where three adjacent populations have $2n = 9$, a most unusual situation. The latter karyotype consists of three metacentrics and six acrocentrics, and thus 12 major chromosome arms which correspond to the 12 acrocentric chromosomes of the typical basic *Homeria* karyotype. The $2n = 9$ karyotype has also been found in *H. tenuis* (also $2n = 10$ and 8) which coincidentally has a similar range. *Homeria tenuis* may be closely related but is clearly quite distinct, having much smaller flowers of slightly different structure in which the proportionately similar tepal claws form a narrow cup round the lower half of the filament column.

SOUTH AFRICA. CAPE: 31.18 (VanRhynsdorp): Klawer (DC), *Lewis 2008* (SAM); *L. Bolus s.n.* (BOL-21313, K).

32.19 (Wuppertal): Dwars Rivier-Krom Rivier turnoff (CB), *Goldblatt 4817* (MO). Cedarberg, at Krom Rivier turnoff, *Goldblatt 4058a* (MO, NBG). Krom Rivier farm, *Goldblatt 5669* (MO, NBG).

22. *Homeria tenuis* Schltr., Bot. Jahrb. Syst. 27: 95. 1900. TYPE: South Africa, Cape, Pakhuis Mts., *Schlechter 8647* (B, lectotype; BOL, E, G, GRA, K, MO, P, PRE, US, Z, isolectotypes).—FIG. 25.

Plants usually small, 7–20 cm high. *Corms* 5–10 mm in diameter, the tunics black or brown, sometimes soft textured. *Leaf* solitary, inserted well above ground, channeled, linear-filiform, to 3 mm wide, exceeding the inflorescence. *Stem* erect, sharply flexed above the leaf insertion, few to several branched, the branches flexed above the stem bracts, the bracts 15–30 mm long. *Spathes* 2–4(–6) cm long, inner initially twice the outer, but later elongating in fruit to partly enclose the immature fruits. *Flowers* pale to deep yellow, small, the lower part of the tepals suberect, forming a cup ca. 3 mm long around the lower half of the filament column, the tepals spreading above; *outer tepals* 10–12 mm long, the claw 2–3 mm long, the limb oblong, to 6 mm wide; inner tepals slightly shorter, to 4 mm wide, lanceolate. *Filaments* united, the column smooth, cylindrical, 5–6 mm long; *anthers* 1.5–2 mm long, diverging from the base, collapsing after anthesis. *Ovary* 5–8 mm long, enclosed in the spathes; *style* branching at the

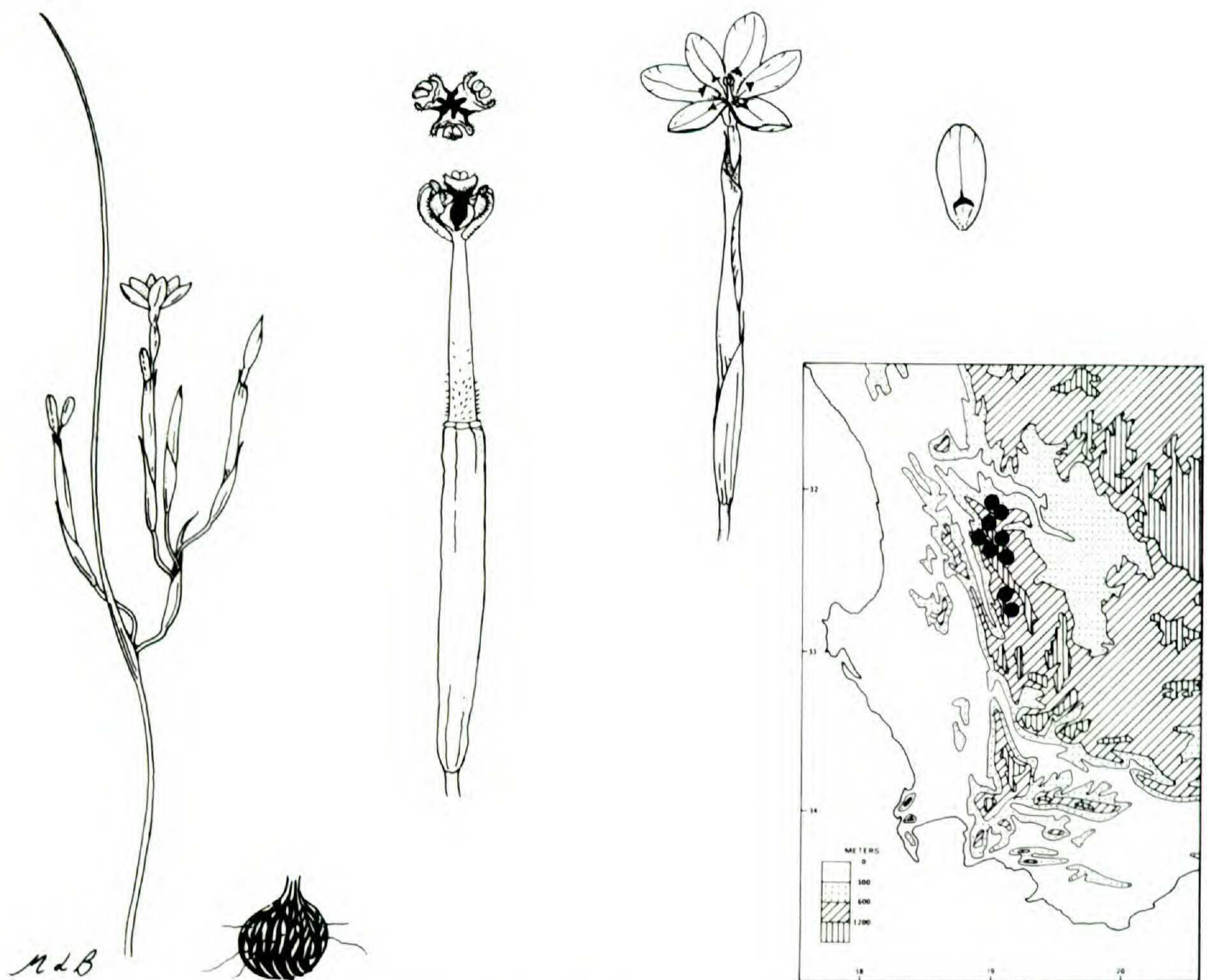


FIGURE 25. Morphology and distribution of *Homeria tenuis*. Habit $\times 0.5$; corm, flower and inner tepal $\times 1$; ovary, stamens and style branches $\times 5$.

base of the anthers; *branches* 1.5–2 mm long, flattened, the stigma bilobed, reaching the mid to upper part of the anther, receptive on the inner lateral surfaces; crests usually present, erect, very short, usually obscured by the anthers. *Capsule* 8–11 mm long, included in the spathes until ripe, clavate-cylindric. *Chromosome number* $2n = 10, 9, 8$.

Flowering time: mid August–early October; flowers open in the afternoon after 2:30 and fade towards evening.

Distribution: Cold Bokkeveld and Cedarberg Mountains, between Elands Kloof and Pakhuis Pass; shallow sandy soils, often on rock ledges and flushes; Fig. 25.

Homeria tenuis is one of the dwarf species of *Homeria*, and its flowers are the smallest in the genus. Its range is centered in the Cedarberg Mountains, with the northernmost record at Brandewyn River, east of Pakhuis Pass, and the southernmost in Elands Kloof. A record from Piketberg [Van Zyl s.n. (BOL)] is doubtful. It grows in sandy, often very shallow soil overlying rock or in rock cracks, and in very extreme conditions plants are particularly dwarfed. In deeper soil plants tend to be taller and more branched but do not have significantly larger

flowers. The growth of *H. tenuis* is strongly inhibited by surrounding vegetation, and it flowers best after fires or when areas have been cleared of bush.

Cytologically the species is of considerable interest as available counts have revealed three populations with $2n = 10$, one with $2n = 8$, and several with $2n = 9$. The latter number, $2n = 9$, has also been recorded in the related *H. flavescens*, which also has $2n = 12$. These two species contrast sharply with the basic $x = 6$ found in all other species of the genus except the unrelated *H. pallida*, a form of which has $2n = 8$. *Homeria tenuis* is evidently an aneuploid species. The significance of three different chromosome numbers in this species has yet to be explained. Plants from the two populations grown experimentally have proved to be autogamous.

SOUTH AFRICA. CAPE: 32.18 (Clanwilliam): Pakhuis Pass (BB), *Salter 7519* (SAM); *Stokoe s.n.* (SAM-55679); *Compton 4312* (BOL); *DeVos 1669* (STE); *Esterhuysen 5023* (PRE). Clanwilliam, *LeRoux s.n.* (BOL). Piketberg (DC), *Van Zyl s.n.* (cult.) (BOL).

32.19 (Wuppertal): Pakhuis-Brandewyn R. (AA), *Goldblatt 3882* (MO, NBG, S). Pakhuisberg, *Schlechter 8647* (B, BOL, E, G, GRA, K, MO, P, PRE, US, Z). Boontjies R., E of Pakhuis, *Leipoldt 20767* (BOL). Heuningvlei, *Esterhuysen 8060* (BOL). Uitkyk Pass (AC), *Barker 266* (NBG); *Lewis s.n.* (SAM-52414). Top of Uitkyk (Cedarberg) Pass, *Martin s.n.* (NBG-59220); *Gillett 4088* (BOL, K, PRE); *Goldblatt 4056* (MO). Welbedacht Kloof, *Stokoe s.n.* (SAM-55680). Driehoek road, Matjes R. valley, *Goldblatt 5122* (K, MO, PRE, S), *5674* (MO). Eikeboom, Cedarberg, *Leighton s.n.* (BOL-21505, PRE). Old Elands Kloof Pass (CA), *Thompson 2951* (STE); *Barker 3116* (BOL, NBG); *Compton 17324* (NBG). Top of Elands Kloof, *Lewis 1350* (SAM); *Goldblatt 5246* (MO, NBG). Krom R. Kloof (CB), *Esterhuysen 20546* (BOL, PRE). Krom River farm, *Goldblatt 5668* (MO).

23. *Homeria miniata* (Andr.) Sweet, Brit. Flow. Gard. 2: tab. 152. 1826. Baker, Fl. Cap. 6: 29. 1896.—FIG. 26

Moraea miniata Andr., Bot. Repos. tab. 404. 1804. TYPE: South Africa, Cape, exact locality unknown, illustration in Andr. Bot. Repos. tab. 404.

Homeria lineata Sweet, Brit. Flow. Gard. 2: tab. 178. 1826. TYPE: South Africa, Cape, exact locality unknown, illustration in Brit. Flow. Gard. tab. 178. Baker, Fl. Cap. 6: 28. 1896.

Moraea lineata (Sweet) Steud., Nom. Bot. 2: 160. 1840.

M. gigantea Klatt, Linnaea 35: 381. 1868. TYPE: South Africa, Cape, "near Little Quaggasfontein," *Burchell 1431* (K, lectotype). South Africa, "between Great and Little Reed Rivers," *Burchell 1388* (K, syntype).

Homeria albida L. Bolus, J. Bot. 69: 258. 1931. TYPE: South Africa, Cape, between Van Rhynsdorp and Van Rhyns Pass, *L. Bolus s.n.* (BOL-19353, holotype; K, isotype).

Plants medium to large, 15–60 cm tall. *Corms* 1–2.5 cm in diameter, with a few to many cormlets round the base, the tunics black, reticulate. *Leaves* (2–)3, linear, canaliculate, (4–)8–12(–17) mm wide, the lowermost basal, the others cauline. *Stem* straight or slightly flexed above the bracts, the branches short, upright, the stem bracts 3–4.5(–6) cm long. *Spathes* (3–)4–6 cm long, the outer about two-thirds the inner, the apices brown. *Flowers* pink, yellow or white, with triangular yellow nectar guides dotted with green, the tepals with a short erect claw, ca. 2 mm long, appressed to the filament column, the limb outspread; *outer tepals* 13–22(–27) mm long, the claw narrow, 2 mm long, pubescent above the midline, the limb 6–10 mm wide, ovoid-ellipsoid; *inner tepals* smaller, ellipsoid-obovoid. *Filaments* united, the column 6–8 mm long, narrow at the base, swollen abruptly and then tapering gradually to the apex, the bulbous part pubescent; *anthers* ca. 2 mm long, after anthesis ca. 1.5 mm, erect, contiguous. *Ovary* 5–10 mm long; *style* dividing just above the anther base; *branches* short, obscured by the an-

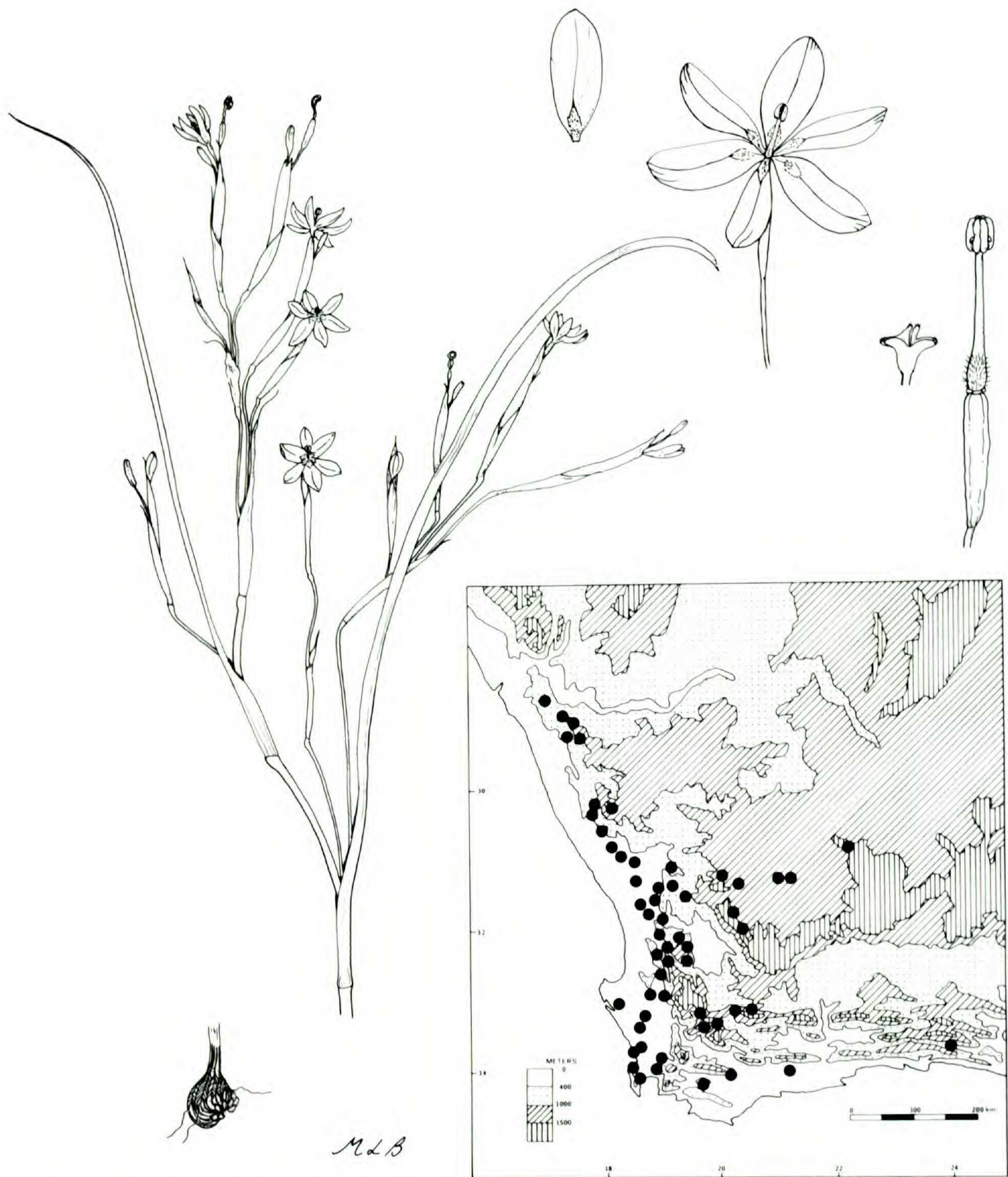


FIGURE 26. Morphology and distribution of *Homeria miniata*. Habit $\times 0.3$; corm, flower and inner tepal $\times 1$; ovary, stamens and style branches $\times 3$, the separated style branches much enlarged.

thers, deeply forked, the arms slender, stigmatic apically and emerging between the anthers; crests absent. *Capsule* 12–16 mm long, cylindrical-ellipsoid; *seeds* angled. *Chromosome number* $2n = 12$ ($2n = 18, 24$ recorded in weedy plants of pastures and cultivated land).

Flowering time: July–September(–October).

Distribution: common along the west coast as far north as Steinkopf and in the western Karoo, occasional in the southern Cape; mainly in clay soils; Fig. 26.

Homeria miniata is one of the most common and the most widespread species of *Homeria*. It extends from the Cape Peninsula north to Namaqualand and inland to Touws River, the Roggeveld and Hantamsberg. Plants vary in flower color from salmon pink to pale yellow, to occasionally pure white. Most often populations are uniform in color. Pink flowers occur predominantly in the south, but from Klaver northwards yellow flowers become increasingly common. White flowers are rare, and are found in populations scattered in Namaqualand and between Van Rhyns Pass and Van Rhynsdorp (the type area for the synonym *H. albida*). A distinctive form also grows at the foot of the Cedarberg, Nardouw and Matsikamma mountains; this form has somewhat smaller and deeper pink flowers.

The species prefers clay soils, although in Namaqualand it often occurs on the gritty granite-derived sand of the area. It has not been recorded growing on sandstone-derived soils. *Homeria miniata* has become a serious weed, and in the south it is often difficult to tell wild from adventive populations, the latter obvious on road verges and in overgrazed pastures. It reproduces readily from axillary cormlets and eradication is very difficult. Some forms in old fields are obviously sterile, and these produce much larger numbers of cormlets than the wild plants. Causes of sterility appear to be chromosomal abnormalities, such as triploidy and aneuploidy, as seen in two populations near Stellenbosch, which I have investigated.

Homeria miniata is related to a group of species with very similar to identical flowers and outspread limbs.

It can readily be distinguished from close allies by its two or usually three straight, linear leaves, and the much swollen and pubescent base of the filament column.

SOUTH AFRICA. CAPE: 29.17 (Springbok): Steinkopf (BA), *Salter 3752* (BOL); *Marloth 6764* (PRE). 4 mi W of Steinkopf, *Hall 115* (WAG). 15 mi N of Springbok (BD), *Maguire 441* (NBG). Nigramoep (DA), *Wikner s.n.* (SAM-65668). Top of Spektakel Pass, *Thompson 1041* (STE). 2 mi E of Springbok (DB), *Compton 22050* (NBG). Hester Malan Reserve, *LeRoux 905, 770* (PRE).

30.17 (Hondeklipbaai): Grootvlei (BD), *Compton 6611* (NBG); *Lewis 5471* (NBG). Upper Bowesdorp valley, *Pillans s.n.* (BOL-31550). Bowesdorp, *Stokoe s.n.* (SAM-55655). Kamieskroon, *Goldblatt 3672A* (MO), 116 (J), *Lewis 5473* (NBG). 7 mi S of Kamieskroon (BD), *Salter 3809* (BOL, K). Brakdam, *Compton 17206* (NBG).

30.18 (Kamiesberg): Kamiesberg (AC), *Martin s.n.* (NBG-59237). Leliefontein, *Rodin 1460* (BOL, K, MO, PRE, S, US). Kamiesberg, top of Studers Pass, *Goldblatt 4045* (MO, PRE). Between Garies and Bitterfontein at Swart Doorn R. (CC), *Lewis 1377* (SAM).

30.22 (Carnarvon): 3.5 mi SW of Carnarvon (CC), *Acocks 16413* (K, PRE).

31.18 (Van Rhynsdorp): Nuwerus (AB), *Steyn 476* (NBG); *Compton 3727* (NBG); *Barker 3619* (NBG). 2 mi S of Nuwerus, *Lewis 1378* (SAM). Bitterfontein, *Compton 11354* (NBG). Knersvlakte (B), *Compton 20689* (NBG); *Pillans 6344* (BOL, K). Knersvlakte near Vars R. (BC), *Goldblatt 3679* (MO). 12 km S of Van Rhynsdorp (DA), *Goldblatt 3886* (C, MO, S, WAG). Zandkraal, *Barker 5636, 5637, 5658* (NBG). Wiedow R., *Lewis 2276* (SAM). Grootdrif, SW of Van Rhyns Pass (DB), *Goldblatt 2284* (MO, PRE). Grootdrif-Van Rhyns Pass, *Goldblatt 3887* (MO, US, WAG). Windhoek (DC), *Schlechter 8356* (BOL, E, G, GRA, K, MO, P, PRE, SAM, S, US, Z). Katberg Pass, Matsikamma plateau (DD), *Goldblatt 3849* (BOL, C, MO, PRE, S, US, WAG).

31.19 (Calvinia): Brandkop, N of Nieuwoudtville (AC), *Maguire 175* (BOL, NBG). 6 mi E of Nieuwoudtville, *Nordenstam 772* (NBG). Willems R., *Leipoldt 786* (SAM). Nieuwoudtville, *L. Bolus s.n.* (BOL-21067). Oorlogskloof-Nieuwoudtville, *Leipoldt 3851* (BOL). Calvinia-Nieuwoudtville (BC), *Goldblatt 3893* (MO); *Theron 1261* (PRE); *Mauve 4151* (M, PRE). 1 km W of Calvinia (BD), *Nordenstam & Lundgren 1069* (MO). Moordenaarspoort 26 mi N of Calvinia, *Lewis 2559* (SAM). 30 mi N of Calvinia, *Lewis 266* (SAM).

31.20 (Williston): Williston (BD), *Bayliss BRI 555* (K, M, MO, P, PRE, WAG). Calvinia-Williston, *Mauve 4152* (K, PRE). Near Williston, *Bayliss 6099* (MO), *Van der Schijff 7045* (J, PRE). Calvinia road N of Middelpos (C), *Barker 10769* (NBG).

32.18 (Clanwilliam): Near Clanwilliam (BB), *L. Bolus s.n.* (BOL); *Lewis s.n.* (BOL). Pakhuis Pass, *Compton et al. s.n.* (NBG-59117), *Barker 1998* (NBG); *Mauve 4657* (K, PRE). Kransvlei Mts., W of Clanwilliam, *Lewis 1857* (SAM). Algeria road near Clanwilliam Dam, *Goldblatt 2563* (M, MO, PRE, WAG). Old Clanwilliam road near Rondegat (BD), *Goldblatt 255* (BOL). Hillside near main road, S of Alpha, *Goldblatt 3928* (MO, WAG). The Rest (DB), *Salter 3605* (K). Pikeniers Pass-Porterville (DD), *Goldblatt 3920* (MO). Piketberg distr., *Taylor 3907* (NBG, PRE).

32.19 (Wuppertal): Welbedacht (AA), *Compton 6612* (NBG). Top of Pakhuis Pass, *Goldblatt s.n.* (MO). Bidouw valley, *Van Jaarsveld 1326* (NBG); *Marsh 401* (K, PRE, STE). Matjesrivier, Cedarberg (AD), *Wegener 150* (NBG).

33.18 (Cape Town): Langebaan (AA), *Salter s.n.* (BOL-31584). Mamre Hills (AD), *Barker 1763* (BOL, NBG). Between Darling and Mamre, *Johnson 176* (NBG). Near Moorreesburg (BA), *L. Bolus s.n.* (BOL-19145); *Weintraub s.n.* (J-19792). 20 km NW of Malmesbury on Hopefield road (BB), *Goldblatt 4082* (MO). Malmesbury (BC), *Lewis s.n.* (NBG-59118). Cape Town (CD), *Pappe s.n.* (SAM-70678, -70679, -70681). W slopes of Table Mt., *Lewis 680* (SAM). Signal Hill, *Phillips 719* (PRE, SAM); *Goldblatt 225* (BOL); *Page s.n.* (BOL-16189). Lions Head, *Zeyher 5018* (SAM). Road to Blaauwberg beach, *Barker 29* (BOL, K). Jonkershoek valley (DD), *Lewis 1656* (NBG, SAM). Lyndoch Station, *Goldblatt 4415* (MO). Stellenbosch flats, *Garside 262* (K).

33.19 (Worcester): Tulbagh (AC), *Hutchinson 361* (K). Hex River Valley (DA), *Wolley Dod 4024* (BOL, K).

33.20 (Montagu): Matjesfontein (BA), *H. Bolus s.n.* (BOL-14398); *Foley 13* (PRE). Whitehill karoo, *Compton 17418* (NBG). 2 mi S of Laingsburg (BB); *Vahrmeijer 2319* (PRE).

33.23 (Willowmore): W of Joubertina (DD), *Goldblatt 4946* (MO, NBG).

34.18 (Simonstown): Bergvliet farm (AB), *Purcell s.n.* (SAM-93377).

34.19 (Caledon): Caledon (AB), *Rogers s.n.* (SAM-48969). Caledon-Warm Baths Hotel, *Gillett 1076* (BOL, STE).

34.20 (Bredasdorp): Hassaquaskloof, near Stormsvlei (AA), *Ecklon & Zeyher 4075* (PRE, S).

34.21 (Riversdale): Hills near Riversdale (AB), *Muir 2679* (BOL, SAM).

Without precise locality: Richtersveld, *Marloth 6764* (BOL). Between Sutherland and Middelpoort, *Hutchinson 719* (BOL, K, PRE).

Unknown locality: Layton, Fraserburg, *Shearing 53A* (K, M, PRE, S). Gounakraal, Fraserburg, *Wall s.n.* (S).

24. *Homeria pendula* Goldbl., sp. nov. TYPE: South Africa, Cape, Kamiesberg, *Goldblatt 4306* (MO, holotype; K, NBG, PRE, S, US, WAG, isotypes).—FIG. 27.

Plantae grandes, 50–75 cm altae, multiramosae. Cormus ca. 2 cm in diametro. Folia 3–4, ad 20 mm lata, caulis excedentia. Caulis erecta, ramis strictus, flexis subspathis. Spathae 4–5 cm longae, exterior parum brevior. Flores lutei, secundi vel penduli, tepalis reflexis; tepala exteriora 24–28 mm longa, ungue ca. 4 mm, erecto; interior parum parviora. Filamenta connata, columna ca. 15 mm longa; bulbosa ad basem; antherae 4–6 mm longae. Ovarium ad 10 mm longum; rami styli 2.5–3.5 mm longi, furcati ad apicem; sine cristis.

Plants tall, 50–75 cm high, much branched. *Corms* ca. 2 cm in diameter with black, coarsely reticulate tunics. *Leaves* 3–4, the lowermost basal, the others cauline, canaliculate, to 60 cm long, bent and trailing, to 2 cm wide. *Stem* straight, the branches erect, flexed below the spathes, the stem bracts dry-herbaceous, brown toward the apices. *Spathes* green, becoming dry above, 4–5 cm long, the outer slightly shorter than the inner. *Flowers* yellow, speckled with dark green in the center, secund to pendulous, the tepals reflexed at maturity; *outer tepals* 24–28 mm long, the claw ca. 4 mm long, erect and held against the filament column, the limb reflexed, narrowly ovate to elliptical, 7–8 mm wide, acuminate; inner tepals similar but slightly smaller. *Filaments* united, the column ca. 15 mm long, swollen abruptly above the base, tapering from the widest part to the apex, puberulous in the lower half; *anthers* 3–6 mm long, erect, contiguous, collapsing somewhat after anthesis, the pollen red. *Ovary* to 10 mm long; *style* branching



FIGURE 27. Morphology and distribution of *Homeria pendula*. Habit $\times 0.3$; flower and outer tepal $\times 1$; ovary and stamens $\times 2.5$.

at anther base; *branches* 2.5–3.5 mm long, bifurcate, the arms 1 mm long, terete, initially obscured by the anthers, later apparent, extending beyond the collapsed anthers; crests lacking. *Capsule* 15–18 mm long, \pm cylindrical, or narrowed towards the base. *Chromosome number* $2n = 12$.

Flowering time: October–early November.

Distribution: Kamiesberg, wetter places such as stream banks, seeps, etc.; above 1100 m; in sand; Fig. 27.

Surprisingly, although *Homeria pendula* is a common and conspicuous plant in the Kamiesberg, it has rarely been collected. It seems few botanists have collected here in October or later. It is one of the largest species of *Homeria*, and as it has many brightly colored and long-lasting flowers, it would be a most desirable horticultural subject.

Homeria pendula clearly seems to be closely related to the more widespread *H. miniata*, and both occur in the Kamiesberg, where *H. pendula* grows in wetter places than *H. miniata*.

SOUTH AFRICA. CAPE: 30.18 (Kamiesberg): Khamiesbergen (AC), *Leipoldt* 3015 (BOL, K); *Leipoldt s.n.* (NBG-59243 cult.). Leliefontein, *Rodin* 1461 (BOL, K, MO, WAG). Plateau above Studers Pass, *Goldblatt* 4306 (K, MO, NBG, PRE, S, US, WAG). Streamsides near Welkom, E slopes of Rooiberg, *Goldblatt* 4309 (MO, WAG). Leliefontein, foot of Eselskop, *Drège* 8313 (S).

25. *Homeria spiralis* L. Bolus, J. Bot. 69: 260. 1931. TYPE: South Africa, Cape, Nieuwoudtville waterfall, *L. Bolus s.n.* (BOL-19348, lectotype; GRA, K, PRE, isolectotypes).—FIG. 28.

Plants small, 10–20 cm high, branched. *Corms* ca. 1 cm in diameter, the tunics black, coarsely reticulate. *Leaves* 3, the lowermost basal, the others cauline, linear, channeled below, flat above and loosely spiralled in the upper part, 2–4 mm wide. *Stem* flexuose, minutely papillate, the stem bracts 3–4 cm long. *Spathes* 2.5–5(–6) cm long, the outer about half the inner. *Flowers* salmon pink with yellow nectar guides and claws, the tepal bases forming a shallow cup narrowly windowed between the base of each, the limb outspread; *outer tepals* 16–23 mm long with a short ascending claw ca. 3 mm long, densely pubescent 1 mm above the base, the limb ca. 9 mm wide, narrowly ovoid or oblong; *inner tepals* smaller, 5–6 mm wide, obovate. *Filaments* united, the column 6 mm long, swollen above the base and then gradually tapering to the apex, densely pubescent in the bulbous part; *anthers* erect, contiguous, ca. 2 mm long, collapsing after anthesis to ca. 1.3 mm. *Ovary* 6–7 mm long; *style* dividing just above the anther base; *branches* short, deeply forked, hidden by the anthers, the arms slender, stigmatic at the apex, emerging between the anthers; crests absent. *Capsule* 10–13 mm long, ± cylindrical. *Chromosome number* $2n = 12$.

Flowering time: August to about mid September.

Distribution: Bokkeveld escarpment from Nieuwoudtville north and northwest; clay soils in renosterbosveld; Fig. 28.

Homeria spiralis is closely related to *H. miniata* and the two species have very similar flowers. They are, however, easy to distinguish from vegetative morphology; *H. spiralis* has a strongly flexuose stem, and narrow leaves that are loosely coiled distally. *Homeria miniata*, in contrast, has straight leaves and a more or less erect stem. *Homeria spiralis* has a restricted distribution, occurring along the northern edge of the Nieuwoudtville (Bokkeveld Mountain) escarpment, north of Nieuwoudtville.

SOUTH AFRICA. CAPE: 31.19 (Calvinia): Clay slopes near Nieuwoudtville waterfall (AC), *Goldblatt* 3934 (MO, PRE WAG), 4336 (MO); *L. Bolus s.n.* (BOL-19348, GRA, K, PRE). Near Nieuwoudtville on Loeriesfontein road, *Lewis* 5849 (NBG, STE). 18 km NW of Nieuwoudtville on Theunisdrift road (AA), *Goldblatt* 3961 (MO, PRE, US, WAG).

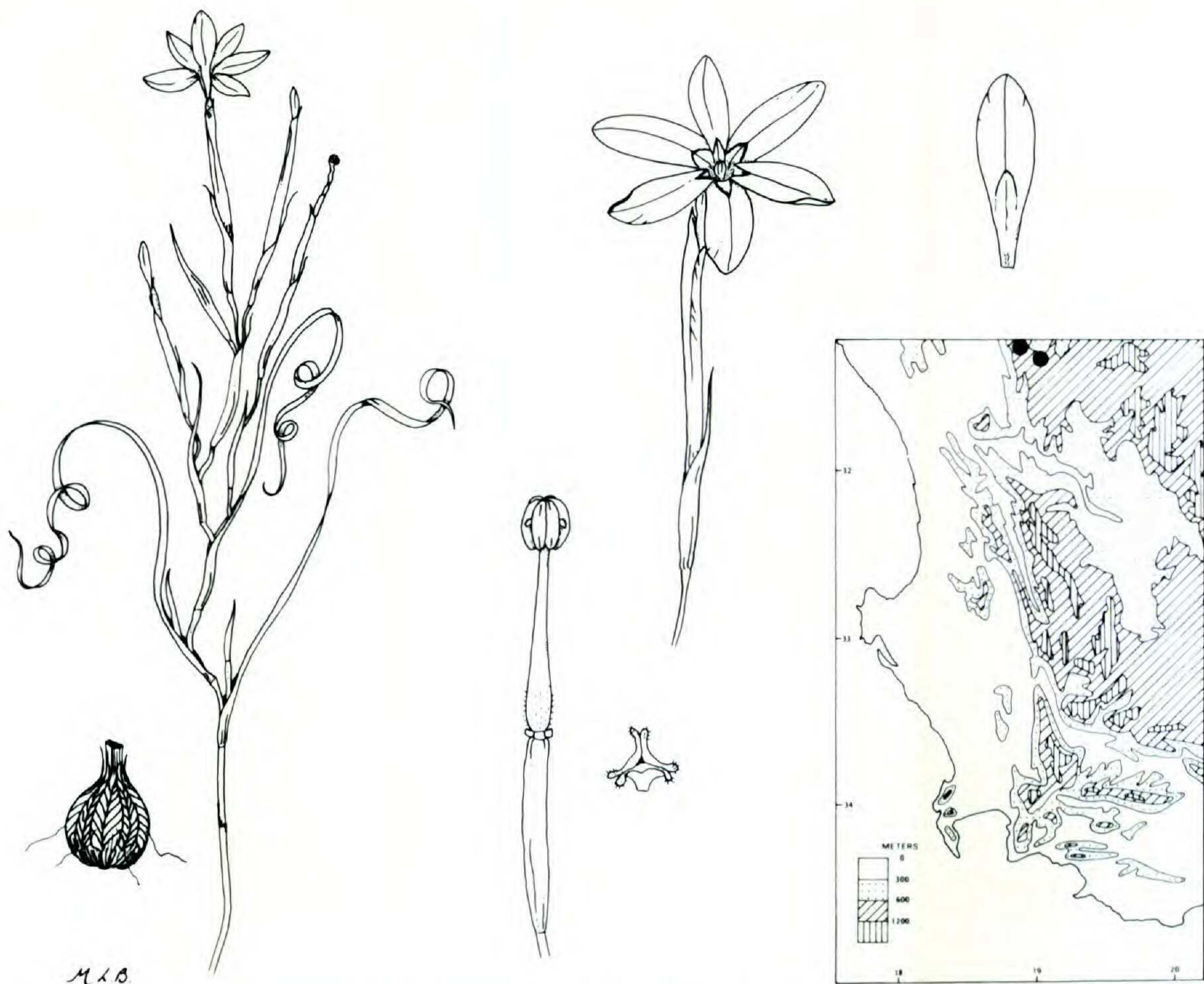


FIGURE 28. Morphology and distribution of *Homeria spiralis*. Habit $\times 0.5$; corm, flower and outer tepal $\times 1$; ovary, stamens and style branches $\times 3$, the separated style branches $\times 6$.

26. *Homeria fenestrata* Goldbl., sp. nov. TYPE: South Africa, Cape, Tanqua basin, 60 km S of Calvinia, *Goldblatt 3906* (MO, holotype; BR, K, NBG, PRE, S, US, WAG, isotypes).—FIG. 29.

Plantae parvae, ad 15 cm altae, pauciramosae. Cormus ca. 1 cm in diametro. Folia 2–4, inferiora supra terram inserta, canaliculata, lineares-filiformia. Caulis flexuosa. Spathae 3–3.5 cm longae, exterior circa dimidium interioris. Flores rosei, luteo ad centrum, unguis tepalorum infra cupuliformia, fenestrata inter tepala; tepala exteriora 15–21 mm longa, ungue ca. 3 mm longo, 1 mm lato, limbo 6–9 mm lato, oblongo-obovato. Filamenta connata, columna cylindrica, 6 mm longa; antherae 3 mm longae. Ovarium ad 4 mm longa; rami styli ca. 1 mm longa, bifurcata ad apicem; cristae obscurae.

Plants small, up to 15 cm tall, branched. *Corms* ca. 1 cm in diameter, the tunics black, reticulate. *Leaves* 2–4, the lowermost inserted well above ground, longer than the stem, channeled, linear, the upper shorter. *Stem* flexuose, all nodes below the spathes with produced leaves not bracts. *Spathes* 3–3.5 cm long, the outer about half the inner. *Flower* pink with yellow nectar guides edged with dark pink, faintly scented, the tepals cupped below but windowed between the narrow bases, spreading distally; *outer tepals* 15–21 mm long, the claw ca. 3 mm, less than 1 mm wide, and minutely papillate in the middle, the limb 6–9 mm wide, oblong to narrowly obovate; inner tepals slightly smaller, the limb obovate. *Filaments* united, the column cylindrical, 6 mm long, minutely papillate in the lower half; *anthers* erect, contiguous, 3 mm long, collapsing to 2 mm after anthesis.

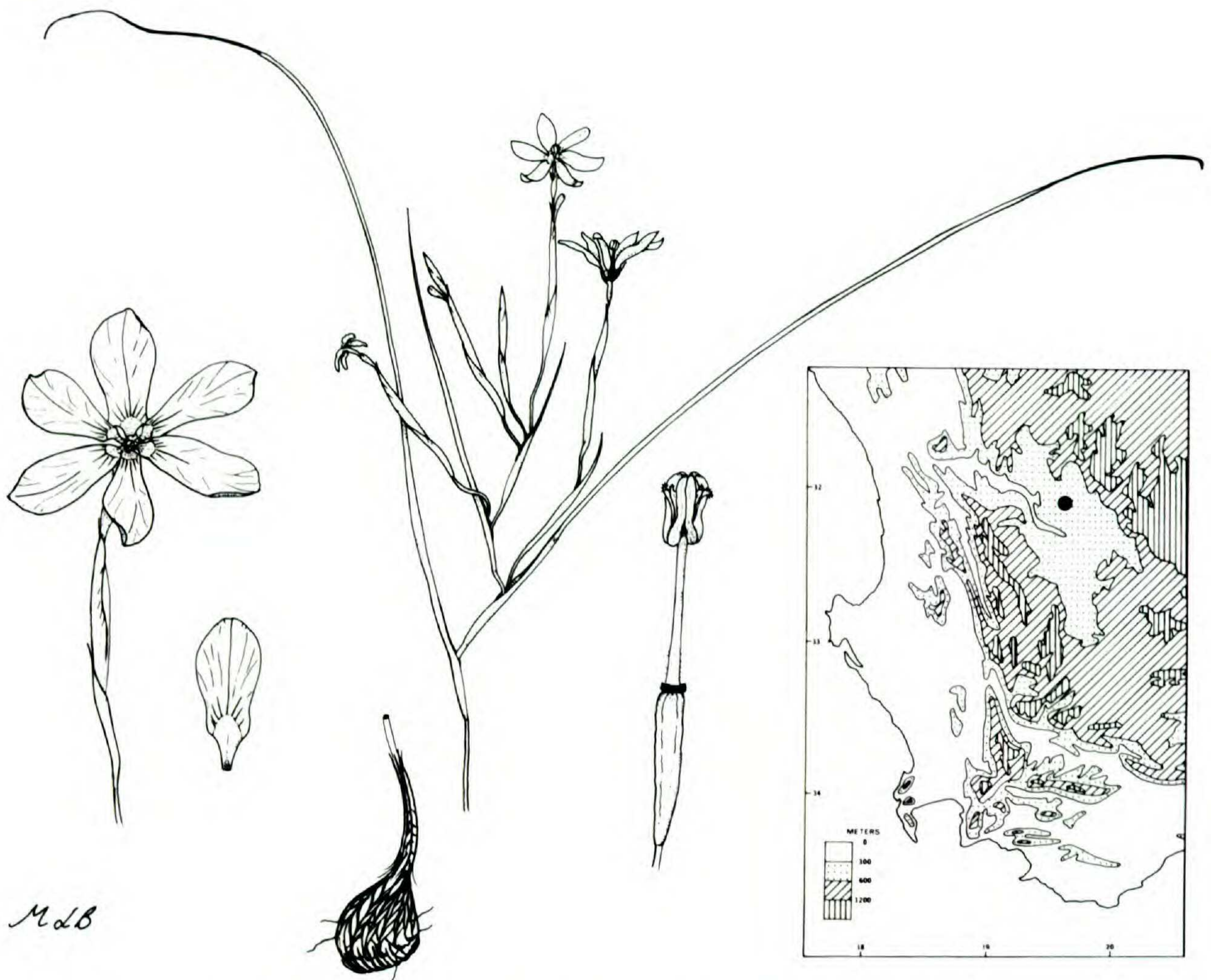


FIGURE 29. Morphology and distribution of *Homeria fenestrata*. Habit $\times 0.5$; corm, flower and outer tepal $\times 1$; ovary, stamens and style branches $\times 3$.

Ovary ca. 4 mm long; *style* dividing near the anther base; *branches* 1 mm long, bifurcate, hidden by anthers, the arms stigmatic apically and emerging between the anthers; crests obscure, minute. *Capsule* and seeds not known. *Chromosome number* $2n = 12$.

Flowering time: July–early August.

Distribution: Tanqua basin between the Cedarberg and Roggeveld escarpment; local on clay soil; Fig. 29.

Homeria fenestrata grows in the arid Tanqua-Doorn River basin between Calvinia and Ceres, where it is apparently fairly local. The species is known only from the type collection, made in August 1976, a particularly good spring for this area, which in many years receives virtually no rain and most species do not flower. It is closely related to *H. miniata* but can easily be distinguished by its slender filament column and narrowly clawed tepals.

SOUTH AFRICA. CAPE: 31.19 (Calvinia): 60 km S of Calvinia, Ceres road (DC), *Goldblatt 3906* (K, MO, NBG, PRE).

27. *Homeria tricolor* Lewis, S. African Gard. 23: 266. 1933. TYPE: South Africa Cape, Jan de Boers and Bonteberg Karoo, *Compton 3778* (BOL, lectotype; NBG, isolectotype). South Africa, Tunnel Siding, *Pillans s.n.* (BOL-14142, syntype); South Africa, Koo, cult. Whitehill Gardens, *Archer 686 sub Compton s.n.* (BOL, syntype).—FIG. 30.

Plants small to medium, 15–30 cm high, branched. *Corms* 1–1.5 cm in diameter, the tunics black, coarsely reticulate. *Leaf* solitary, basal, or rarely up to 3, with lowermost basal, linear, canaliculate, to 7 mm wide, exceeding the stem, distally often broken or trailing. *Stem* erect, usually flexed below each node, the bracts 3–6 cm long, the apices attenuate. *Spathes* 3.5–7 cm long, the outer about half as long as the inner, the inner elongating in fruit to enclose the ripening capsules. *Flowers* orange with a dark band near the tepal base, the center yellow, the tepals forming a wide cup 6–7 mm deep, 6 mm wide, the distal parts outspread; *outer tepals* 18–24 mm long, the claw 5–6 mm long, ascending, the limb horizontal, 7–8 mm wide, oblong to ovate; inner tepals slightly smaller, obovate. *Filaments* united, the column 7–9 mm long, slender, tapering slightly towards the apex, smooth or sparsely and minutely papillate; *anthers* erect, contiguous, to 3.5 mm long, collapsing to 2–2.5 mm after anthesis. *Ovary* 10–12 mm long; *style* branching near the anther base; *branches* short, 1.5–2 mm long, obscured by the anthers, bifurcate, the arms terete, emerging between the anthers; crests absent. *Capsule* 9–15 mm long, ± cylindrical, enclosed by the elongated inner spathe. *Chromosome number* $2n = 12$.

Flowering time: late September and October.

Distribution: from Barrydale and Laingsburg in the east to Koo and Karooport in the west; clay soils in dry renosterbosveld or karoo-scrub; Fig. 30.

Homeria tricolor is a fairly common, late-flowering species of the western Little Karoo and adjacent areas to the north between Laingsburg and Karooport. It is related to the more widespread *H. miniata* but differs not only in flower color and leaf number, but in the fundamental structure of the flower. *Homeria tricolor* has spreading tepals, which are cupped at the base, and a cylindrical filament column, while in *H. miniata* the short tepal claws are pressed against the base of the bulbous filament column. A closer relative is probably *H. fenestrata*, a rare species of the Tanqua basin to the north, which has a similar habit, but two or more leaves, while *H. tricolor* rarely has more than a single basal leaf. Two collections only are known of plants with more than one leaf, *Wall s.n.*, from Verlaten Kloof near Sutherland, and *Goldblatt 6302*, from the Koedoes Mts. These have up to three leaves, only the lowermost being basal.

SOUTH AFRICA. CAPE: 31.20 (Williston): Williston, koppie in town (BD), *Mauve 4131* (PRE).

32.20 (Sutherland): E of Bizansgat farm, Koedoes Mts. (CC), *Goldblatt 6302* (MO, NBG); Verlaten Kloof, Sutherland (DA), *Wall s.n.* (S).

33.19 (Worcester): Karoo Poort-Ceres (B), *Dymond s.n.* (BOL-21223). Tunnel Siding (BD), *Pillans s.n.* (BOL-14142). Top of Hex River Pass, *Goldblatt 3208* (MO, NBG). Koo (DB), *Archer 686* (BOL).

33.20 (Montagu): Jan de Boers and Bonteberg Karoo (AC), *Compton 3778* (BOL, NBG). Near

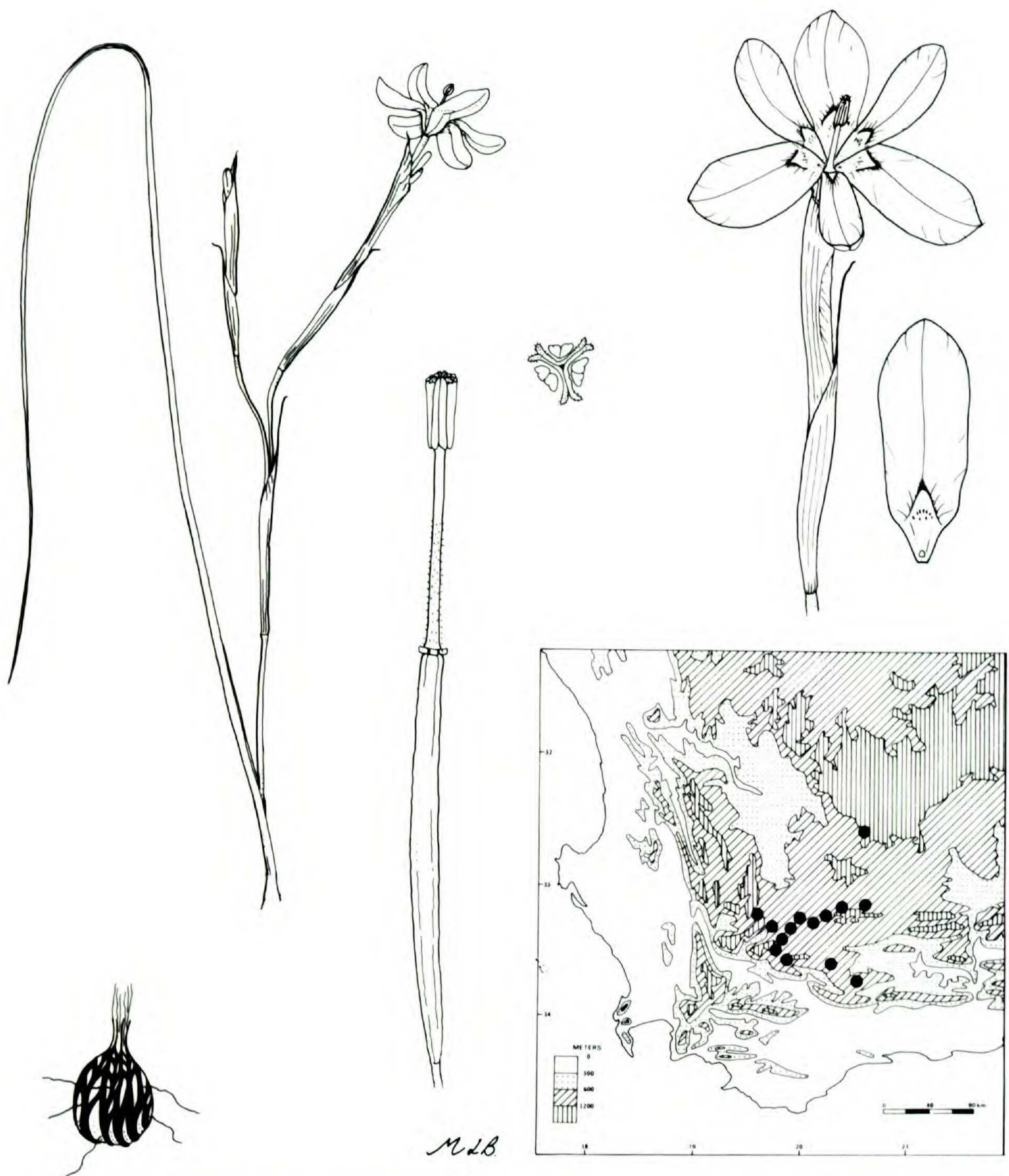


FIGURE 30. Morphology and distribution of *Homeria tricolor*. Habit $\times 0.5$; corm, flower and outer tepal $\times 1$; ovary, stamens and style branches $\times 3$, the top view enlarged.

Matjesfontein and Dwars in de Weg (BA), *Marloth 9583* (B). Matjesfontein, *Fries et al. 1753* (LD, PRE, S); *Marloth 9586* (PRE). Whitehill Ridge, *Compton 15179* (NBG). Whitehill, Karoo Gardens, *Walgate 309* (NBG). Koppie N of Whitehill, *Thoday s.n.* (SAM-25203). Ouberg Pass, Touws R. distr. (CA), *Dymond s.n.* (BOL). 20 mi from Montagu on old Ladismith road (CB), *Lewis & Esterhuysen s.n.* (NBG-59222). Kalkoehoek road, N of Montagu-Barrydale highway (CD), *Goldblatt 4183* (K, MO, NBG, PRE, WAG).

28. *Homeria bifida* L. Bolus, *Ann. Bolus Herb.* 3: 10. 1920. TYPE: Origin unknown, found growing at Kirstenbosch Botanic Gardens, *Page s.n.* (BOL-15815, holotype).—FIG. 31.



FIGURE 31. Morphology and distribution of *Homeria bifida*. Habit $\times 0.3$; corm, flower and outer tepal $\times 1$; ovary, stamens and style branches $\times 3$.

Homeria salmonea L. Bolus, J. Bot. 69: 259. 1931. TYPE: South Africa, Cape, near Nieuwoudtville, L. Bolus s.n. (BOL-19542, lectotype; K, PRE isoelectotypes).

Plants medium, to large, 20–75 cm tall. *Corm* 1.5–2 cm in diameter. *Leaf* solitary, basal, the lower part sheathing the stem, distally falcate, often broken and dry above, channeled, 15–20 mm wide. *Stem* erect, with a long basal internode, much branched from the upper nodes, the branches short, close to the

stem, flexed below the spathe, the spathes diverging from stem, the bracts 3–6 cm long. *Spathes* 3–4 cm long, the outer about two-thirds the inner. *Flowers* pale yellow or pink, the nectar guide deep yellow with green spots, the claw of the tepals short, ca. 2 mm, erect, appressed to the filament column, the limbs outspread; *outer tepals* 16–20 mm long, the claw narrow, 2 mm long, glabrous, the limb oblong to narrowly obovate, 9–14 mm wide; inner tepals slightly smaller, narrowly elliptical. *Filaments* united, the column 6–8 mm long, pubescent except at the very base and near the apex, abruptly swollen above the base, and then gradually tapering from the lower third to the apex; *anthers* ca. 2.5 mm long, shrinking to about 2 mm after anthesis, erect, contiguous. *Ovary* 7–9 mm long; *style* expanded above the filament column, dividing at the middle of the anthers; *branches* ca. 1 mm long, deeply forked, the arms stigmatic at tips, emerging between the anthers; *crests* lacking. *Capsule* ellipsoid, 10–12 mm long, 4 mm at the widest. *Chromosome number* $2n = 12, 12 + 4B, 24$.

Flowering time: August–September.

Distribution: mainly in the Calvinia district, but recorded to the north at Loeriesfontein and in the eastern Kamiesberg; mainly in clay soils; Fig. 31.

Homeria bifida was described from plants naturalized at the Botanic Gardens at Kirstenbosch and for many years the species was not matched with any known wild plant. I have examined the type material which includes good illustrations and am confident that *H. bifida* matches the northwestern Cape species known currently as *H. salmonea*. Since the latter was described much later than *H. bifida*, it must be reduced to synonymy. The species is closely related to the more wide ranging *H. miniata*, and the two are all but identical in flower structure. *Homeria bifida* can, however, be easily distinguished by its vegetative morphology, with its distinctive, broad leaf sheathing the lower part of the stem, and short crowded branching near the top of the stem. It is also closely related to *H. odorata*, a species restricted to the Nieuwoudtville area, which has a similar vegetative structure. Hybrids have been found in the wild between these two species. (See further discussion under *H. odorata*.)

SOUTH AFRICA. CAPE: 30.18 (Kamiesberg): Draaiklip (AA), *Pearson 6817* (K). 48 km E of Garies on Platbakkies road (AC), *Goldblatt 4053* (K, MO, NBG, PRE, WAG).

30.19 (Loeriesfontein): 7 km SW of Loeriesfontein (CD), *Goldblatt 3950* (BR, MO, NBG, PRE).

31.19 (Calvinia): Near Nieuwoudtville waterfall on Loeriesfontein road (AC), *L. Bolus s.n.* (BOL-19542, K, PRE). Nieuwoudtville waterfall, *Johnson 605* (NBG), *Lewis 2560* (SAM); *L. Bolus s.n.* (BOL-21004). Klipkoppies, 6 mi E of Nieuwoudtville, *L. Bolus s.n.* (BOL-19527). Glenlyon, Nieuwoudtville, *Goldblatt 3969* (C, MO, US); *Hardy 75* (K, PRE). 20 km W of Calvinia toward Loeriesfontein (BC), *Goldblatt 3942* (K, MO, WAG). Driefontein, voor Hantam (D), *Marloth 12819* (PRE). Slopes of Rebungieberg (DA), *Goldblatt 3894* (MO, K, NBG, PRE).

31.20 (Williston): 33 km SE of Calvinia, near Roggeveld escarpment (CC), *Goldblatt 4279* (MO, WAG).

32.19 (Wuppertal): Duiwelskop, Cedarsberg (?A), *Stokoe s.n.* (SAM).

- 29. *Homeria odorata* L.** Bolus, Bull. Misc. Inform. 1932: 326. 1932. TYPE: South Africa, Cape, "Klipkoppies" near Nieuwoudtville, *L. Bolus s.n.* (BOL-19968, lectotype; K, isolectotype).—FIG. 32.

Plants medium 30–45 cm tall. *Corms* 1–2 cm in diameter, the tunics often softer in texture than usual and dark brown. *Leaf* solitary, basal, sheathing the lower part of the stem, falcate above, channeled, 12–20 mm wide. *Stem* erect, straight, with a long basal internode, much branched in the upper half, the branches short, held close to the stem, flexed below the spathe, the spathes diverging, the stem bracts 2–3 cm long, usually transparent and dry in the upper half. *Spathes* 3.5–4 cm long, the outer half to two-thirds the inner. *Flowers* pale yellow, rarely pale pink with a dark yellow nectar guide outlined in dull grey-green, sweet scented, the tepals forming a narrow cup in the lower part enclosing the filament column and anthers, spreading horizontally in the upper part; *outer tepals* 23–25 mm long, the claw ca. 8 mm long, erect, the limb oval, 9–11 mm wide; inner tepals slightly smaller. *Filaments* united, the column 4–5 mm long, wider at the base, tapering towards the apex, minutely puberulous in the lower half; *anthers* erect, contiguous, 1.5–2 mm long. *Ovary* 6–7 mm long, often speckled irregularly; *style* expanded above the filament column, dividing at the midline of the anthers; *branches* short, ca. 1 mm long, deeply forked, the arms ca. 0.5 mm long, stigmatic at the tips, emerging between the anthers or arching just above them; crests lacking. *Capsule* 7–10 mm long, to 5 mm wide, obovate-truncate. *Chromosome number* $2n = 12$.

Flowering time: mid August–September.

Distribution: very local round Nieuwoudtville; heavy red clay soil; Fig. 32.

Homeria odorata is known only from the area of Nieuwoudtville, in the Calvinia district, where it is fairly common in the heavy red clay soils found to the east of the town. It is closely related to *H. bifida* and their similarity in vegetative morphology is striking. The tepals of *H. odorata* are almost always pale yellow and form a narrow cup enclosing the stamens and style, the feature which distinguishes it from *H. bifida*. In the latter, which in the Nieuwoudtville area is usually pink, only the base of the filament column is enclosed by tepals, and the remainder of the column and stamens extend well beyond the tepals. The two species both occur around Nieuwoudtville, where *H. odorata* often seems to grow in the heaviest soils and *H. bifida* in rockier sites. At places where these habitats are adjacent, hybrids between the two species occur. The hybrids have been found to be completely sterile when grown in the greenhouse.

Specimens of an early collection, *Schlechter 10942* of this species bear the manuscript name *H. latifolia* Schlechter. Evidently Schlechter considered the species distinct but for some reason did not ever publish a description.

SOUTH AFRICA. CAPE: 31.19 (Calvinia): Oorlogs Kloof, hills (AC), *Schlechter 10942* (B, BOL, G, GRA, K, P, PH, PRE, S, US, Z). Between Nieuwoudtville and Oorlogskloof, *Leipoldt 3854* (BOL). Klipkoppies, 6 mi from Nieuwoudtville, *L. Bolus s.n.* (BOL-19968, GRA, K). Glenlyon farm, Nieuwoudtville distr., *Goldblatt 246* (BOL), *3967* (BR, MO, PRE, WAG).

30. *Homeria fuscomontana* Goldbl. sp. nov. TYPE: South Africa, Cape, suurvlaakte, N Cold Bokkeveld, plateau above Winkelhaaks R., *Esterhuysen 33951* (BOL, holotype; K, MO, PRE, S, isotypes).

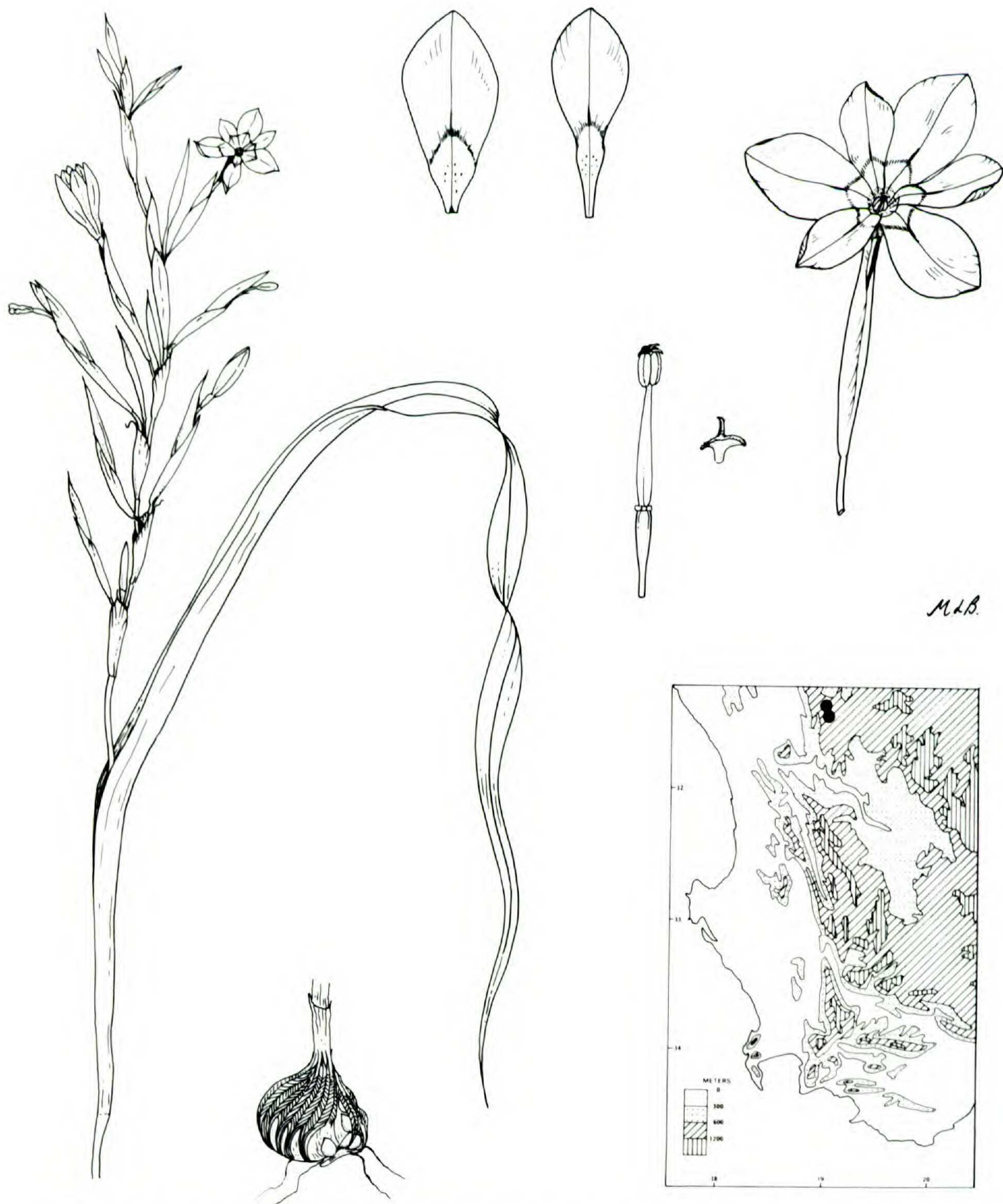


FIGURE 32. Morphology and distribution of *Homeria odorata*. Habit $\times 0.5$; corm, flower, inner and outer tepal $\times 1$; ovary, stamens and style branches $\times 3$, the separated style branches enlarged.

Planta 10–25 cm alta. Cormus ad 10 mm in diametro. Folium unicum supra terram insertum, caulem excedens. Caulis flexuosus, aliquot ramosus. Spathae 2.5–4 cm longae, interior circa dupla longior exteriori. Flores flavi, unguis tepalorum cupulati circa basem filamentorum; tepala exteriora ad 22 mm longa, limbis 19 mm, interiora 20 mm longa. Filamenta connata, 6 mm longa, cylindrica; antherae 2–3 mm longae, connata. Ovarium 4–5 mm longum, inclusum, stylus divisus in medio antherarum, rami breves, 1.5 mm longi, bilobi.

Plant 10–25 cm high. *Corm* to 10 mm in diameter, tunics of dark fibers. *Cataphyll* solitary, dry, extending above ground, and becoming fibrous above. *Leaf*

solitary, inserted well above ground level, channeled, long and trailing. *Stem* erect below, flexed above sheathing base of leaf, bearing 1–several branches; stem bracts herbaceous, 2–3 cm long. *Spathes* 2.5–4 cm long, inner initially about twice as long as outer, but lengthening during flowering. *Flower* pale yellow, with deep yellow nectar guides towards base of tepal limb, with scattered green dots, tepal claws erect, forming a tube round lower half of filament column, limbs extending more or less horizontally; *outer tepals* oblong, obtuse, to 2.2 cm long, 8 mm wide, claw 3 mm; inner tepals ca. 20 mm long, narrow cuneiform, widest in upper third, to 7 mm wide. *Filaments* united, column 6 mm long, cylindrical and pubescent in lower $\frac{2}{3}$, tapering and smooth above; *anthers* initially ca. 3 mm long, erect, contiguous, collapsing after anthesis and less than 2 mm. Ovary 4–5 mm long, enclosed in spathes, style dividing at mid-anther level, branches short, ca. 1.5 mm, flat, bilobed, with arms curved outwards, protruding either side of subtending anther, stigmatic and ciliate at tips only. *Capsule* ovoid, to 8 mm long. *Chromosome number* $2n = 12$.

Flowering time: September, flowers open between 10 and 11 A.M., close in the evenings and fade mid-morning two days later.

Distribution: stony slopes in the eastern Cold Bokkeveld, in arid fynbos; Fig. 33.

Homeria fuscomontana is a poorly known species, apparently related to the *H. miniata* complex. It has the stamens and style branches characteristic of section *Conanthera*, and the flowers resemble closely those of *H. miniata*, except that the filament column is cylindrical rather than bulbous below, as is characteristic of *H. miniata*. It is readily distinguished from other species in the section by its single leaf inserted above ground level, the stem flexed above the leaf sheath and the small inflorescence spathes enclosing the ovary during development. *H. fuscomontana* is similar in vegetative characteristics only to *H. brachygyne* within the section but the latter has a larger, and papillate filament column (to 8 mm long) held well above the tepals, and salmon colored flowers. *H. fuscomontana* is diploid as are all the other species of section *Conanthera*.

The species is easily confused with *Homeria tenuis* and *H. flavescens* as these three species are similar in size and general appearance. Properly pressed or live flowers are needed for accurate determination.

SOUTH AFRICA. CAPE: 32.19 (Wuppertal) suurvlakte, N Cold Bokkeveld on stony plateau above Winkelhaaks R. (CD), *Esterhuysen* 33951 (BOL, K, MO, PRE, WAG); Swartruggens, road to Katbakkies Pass, near Liberty, *Goldblatt* 4188 (MO), 5344 (MO).

31. *Homeria brachygyne* Schltr., Bot. Jahrb. Syst. 27: 94. 1900. TYPE: South Africa, Cape, Bullshoek, Olifants R. valley, *Schlechter* 8381 (B, lectotype; BOL, G, GRA, K, PRE, Z, isolectotypes).—FIG. 33.

Homeria papillosa L. Bolus, J. Bot. 69: 260. 1931. TYPE: South Africa, Cape, Van Rhyns Pass, *L. Bolus s.n.* (BOL-19541, holotype; K, PRE, SAM, isotypes).

Plants small to medium, 8–25 cm high, branched. *Corms* up to 10 mm in diameter, the tunics black, coarsely reticulate. *Leaf* solitary, inserted well above

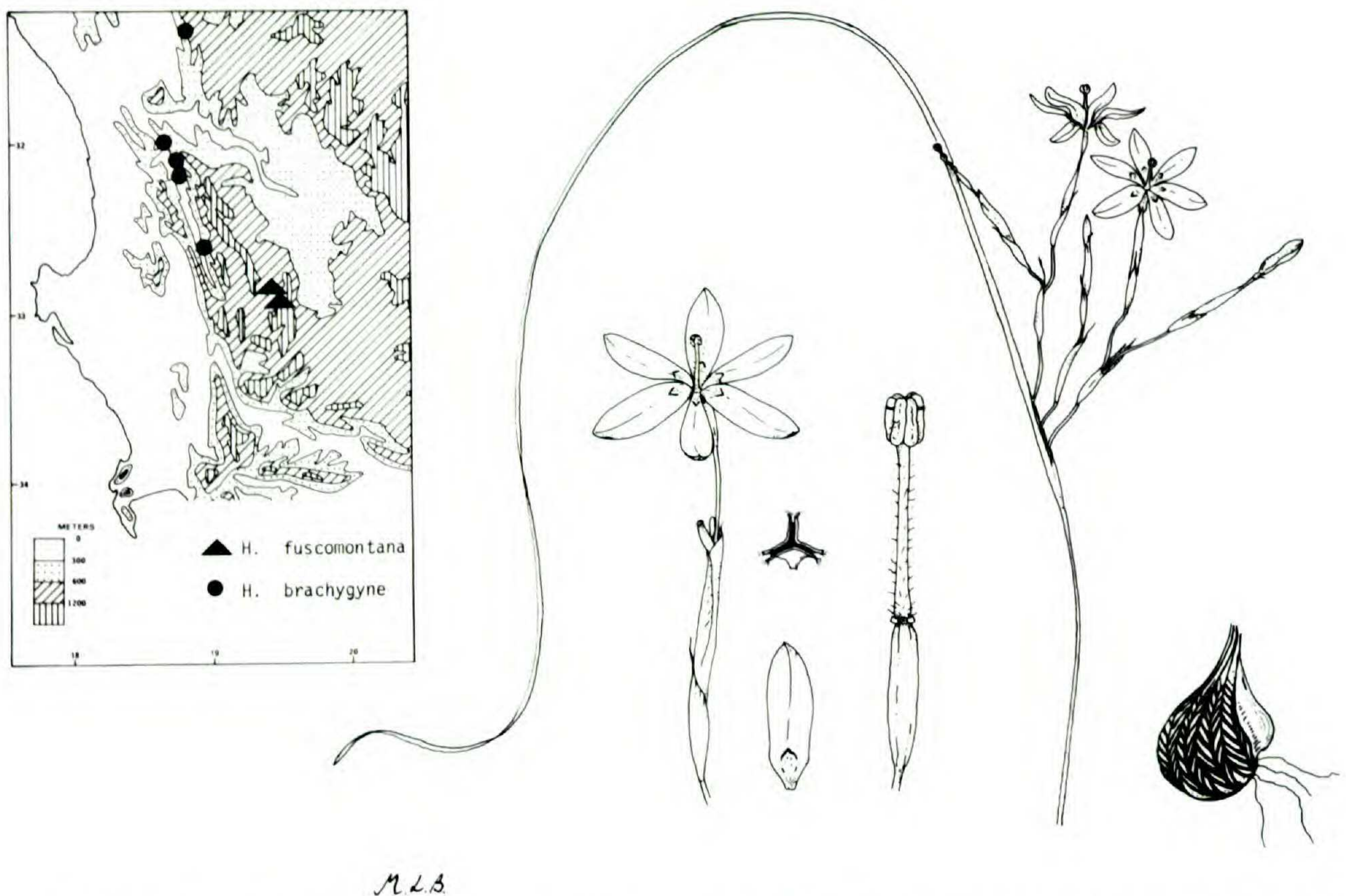


FIGURE 33. Distribution of *Homeria fuscomontana* and *H. brachygyne*, with morphology of *H. brachygyne*. Habit $\times 0.5$; corm, flower and outer tepal $\times 1$; ovary, stamens and style branches $\times 3$, the separated style branches enlarged.

ground, linear, canaliculate to flat, 2–4 mm wide, longer than the stem; the lowest stem bract sometimes with a free apex and \pm leaflike. *Stem* flexed above the leaf insertion and above each stem bract, often densely branched, the bracts 1.5–2(–3) cm long. *Spathes* 3–5 cm long, the outer about half as long as the inner. *Flowers* salmon pink, the nectar guides yellow, the lower part of the tepals forming a shallow cup, the upper part outspread; *outer tepals* slightly larger than the inner, 18–22 mm long, the claw ca. 4 mm long, narrow, papillate towards the base, the limb obovate, often slightly pandurate, 6–9 mm at the widest point; inner tepals 5–6 mm wide. *Filaments* united, the column cylindrical, 6–8 mm long, papillate in the lower half; *anthers* to 3 mm long, erect, contiguous, collapsing after anthesis and seldom over 2 mm long. *Ovary* 5–6 mm long; *style* branching at the anther base; *branches* concealed by the anthers, short, bifurcate, the arms terete, stigmatic at the tips, the apices of the style branches emerging between the anthers; crests lacking. *Capsule* 8–10 mm long, ellipsoid; seeds many, angular. *Chromosome number* $2n = 12$.

Flowering time: late July–early September.

Distribution: Olifants River valley between Citrusdal and Klawer, and local to the north on Van Rhyns Pass; mainly on sandy soils; Fig. 33.

Homeria brachygyne is better known by its synonym, *H. papillosa*, a much later name, but comparison of the type material of *H. brachygyne* leaves no doubt

that the two species are identical. It is related to the widespread west coast and western Karoo species, *H. miniata*, and the two can easily be confused if examined superficially, as the flowers, in both size and color, are similar. *Homeria brachygyne* always has a flexed stem with a single leaf and a cylindrical filament column, features which readily distinguish it from the multi-leafed *H. miniata*, which has a noticeably bulbous-based filament column. The two species share the same range and may grow fairly close to one another, but *H. brachygyne* is usually found in sandy situations, and *H. miniata* usually grows in clay soils.

SOUTH AFRICA. CAPE: 31.18 (Van Rhynsdorp): Olifants R. valley, near Trawal (DC), *Goldblatt 3930* (K, MO, NBG, PRE). 23 km N of Clanwilliam, *Goldblatt 3931* (MO). Bullshoek, sandy places (DD), *Schlechter 8381* (B, BOL, G, GRA, K, PRE, Z). Clanwilliam barrage, *Compton 11057* (NBG).

31.19 (Calvinia): Van Rhyns Pass (AC), *Bond 1155* (NBG). 1.5 mi below top of Van Rhyns Pass, *L. Bolus s.n.* (BOL-19541, K, PRE, SAM). Near top of Van Rhyns Pass, *Goldblatt 261* (BOL), *131* (J).

32.19 (Wuppertal): Citrusdal vlei (CA), *Barker 3603* (BOL, NBG).

Locality unknown: Lammkraal, *Schlechter 10844* (B, BOL, G, GRA, K, LD, MO, P, PRE, S, US, Z).

EXCLUDED SPECIES

Homeria aurantiaca (Zuccagni) Sweet, Hort. Brit. ed. 2: 498. 1830.

Sisyrinchium aurantiacum Zuccagni in Roemer, Coll. Bot., Cent. 1: 145. 1807.

Homeria collina var. *aurantiaca* (Zuccagni) Baker, Handb. Irid. 72. 1892. Fl. Cap. 6: 28. 1896.

The name *H. aurantiaca* has long been applied to *H. flaccida* Sweet but as explained in the text, the type of the basionym *Sisyrinchium aurantiacum* was probably destroyed when Zuccagni's insect damaged herbarium was discarded.

The description alone is insufficient for identification of the species.

Homeria flexuosa (L.f.) Sweet—This is a species of *Hexaglottis* currently known as *H. lewisiae* Goldbl.

Homeria herrei L. Bolus—This is a later synonym of *Helixyra spiralis* N. E. Brown, 1929, now *Barnardiella spiralis* (N. E. Brown) Goldbl. (Goldblatt, 1976c).

Homeria lilacina L. Bolus—This has recently been shown to be a synonym of *Moraea polyanthos* Thunb. (Goldblatt, 1979b) and is presently regarded as a species of *Moraea* (Goldblatt, 1980a).

Homeria maximilianii Schltr.—This has recently been placed in a separate genus *Rheome* (Goldblatt, 1980a), as *R. maximiliani* (Schltr.) Goldbl.

Homeria porrifolia Sweet, Hort. Brit., ed. 2: 498. 1830, nom. nud. The species name was listed with a reference to Curtis' Botanical Magazine, without page or plate cited. It has not been identified.

Homeria rogersii L. Bolus—This is now regarded as a synonym of *Moraea crispa* Thunb. (Goldblatt, 1979b) and is currently assigned to *Moraea* (Goldblatt, 1980a).

Homeria simulans Baker—This was treated as a species of *Moraea* (Goldblatt, 1976a) in which it required the new name *M. elsiae* Goldbl.

Homeria speciosa L. Bolus—This has been transferred to *Moraea* (Goldblatt, 1980a) as *M. speciosa* (L. Bolus) Goldbl.

- Homeria spicata* (Ker) Sweet sensu Klatt, *Linnaea* 34: 626. 1866. is *Hexaglottis virgata* (Jacq.) Sweet.
- Homeria umbellata* (Thunb.) Lewis—This has been assigned to the new genus *Rheome* (Goldblatt, 1980a) as *R. umbellata* (Thunb.) Goldbl.
- Homeria virgata* (Jacq.) Sweet—This is *Hexaglottis virgata* (Jacq.) Sweet.

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